



HIV IN THE WHO AFRICAN REGION

Progress towards achieving universal access
to priority health sector interventions

2011 UPDATE



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FOREWORD

This is the first report issued by the WHO Regional Office for Africa that combines an analysis of the empirical data generated by HIV surveillance systems and progress made so far in expanding access to HIV prevention, treatment, care and support services in the WHO African Region. It provides a regional and subregional perspective on progress made towards achieving universal access to priority HIV interventions in the health sector. It focuses on interventions that are especially relevant to the epidemiological situation in countries of the Region, some of which are predominantly implemented in the Region.

One of the key conclusions of this report is that HIV prevention, treatment, care and support services have been rapidly scaled up in the WHO African Region. In 2009 alone, almost 1 million additional individuals received life-saving antiretroviral medicines. By the end of 2009, an estimated 4 million individuals were receiving antiretroviral therapy in the Region. However, the coverage for HIV services is not universal, with only 37% of individuals in need currently receiving antiretroviral therapy and 54% of pregnant women living with HIV receiving antiretroviral therapy for preventing mother-to-child transmission. This implies that, in addition to accelerated efforts, new models are necessary to enhance access to and the efficiency and effectiveness of services.

Links between HIV programmes and other public health programmes need to be strengthened. Linking programmes and integrating HIV into other key health services can potentially improve the efficiency and effectiveness of both HIV-specific interventions and broader health interventions. I call for stronger collaboration between HIV and TB programmes in providing integrated HIV and TB services and stronger links in countries between HIV programmes and services and those for maternal, newborn and child health and sexual and reproductive health. I also call on Member States to effectively use the standardized and simplified operational tools, such as those for the Integrated Management of Pregnancy and Childbirth and Integrated Management of Childhood, Adolescent and Adult Illness, to support the decentralization and integration of relevant interventions in primary care.

HIV programmes have helped strengthen national health systems by attracting new funding for health, supporting capacity-building and integrating chronic disease management into health care settings. Much more must be done to ensure that HIV investment translates into broad-based health system strengthening, especially in strengthening procurement and supply management systems, building laboratory capacity, improving information systems and helping to address the shortage of health workers in many countries.

I urge Member States to continue to mobilize adequate funding from domestic and external sources to keep pace with the increased demand for HIV services. All efforts should be made to minimize out-of-pocket expenditure and to reduce other financial barriers to accessing HIV services, to improve equity in health.

Let us all continue to do more to reduce the number of people newly infected with HIV and to accelerate progress towards achieving universal access for HIV interventions and services, eliminating the mother-to-child transmission of HIV and the Millennium Development Goals by 2015.



Luis G. Sambo

WHO Regional Director for Africa

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The principal authors were Abdikamal Alisalad, Emil Asamoah-Odei, Dick Chamla, Shu-Shu Tekle-Haimanot, Erica Kufa, Frank Lule, Morkor Newman, Spes Ntabangana, Paul Assimawe Pana and Isseu Diop Toure. Silvia Bertagnolio contributed to the section on HIV drug resistance, Françoise Renaud-Thery provided information on procurement and supplies management, Henriette Wembanyama contributed to writing the section of the report on TB and HIV and Jean-Bapiste Tapko contributed to writing the section of the report on blood safety.

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EXECUTIVE SUMMARY

Since the WHO-led “3 by 5” Initiative began in 2003, the world has witnessed an unprecedented expansion in access to selected health-sector interventions and services for HIV prevention, treatment, care and support in low- and middle-income countries. This expansion has also been seen in several of the 46 countries of the WHO African Region, all except one of which are located in sub-Saharan Africa, the region that still bears the brunt of the global HIV burden. This report provides an update of the empirical data generated by HIV surveillance systems and reviews progress in expanding access to HIV prevention, treatment, care and support services in the WHO African Region.

The report focuses on interventions that are more relevant to the epidemiological situation in countries of the Region, some of which are predominantly implemented in the Region. These include HIV testing and counselling, treatment and care, preventing mother-to-child transmission, HIV prevention among key populations at higher risk of HIV exposure and infection, male circumcision and blood safety. The report also identifies enabling factors and challenges in achieving universal access to HIV prevention, treatment, care and support and the Millennium Development Goals and proposes concrete actions that will help countries accelerate progress towards achieving these targets and goals.

Epidemiological situation of HIV in the African Region

Although HIV prevalence still remains high in the Region, the median HIV prevalence among pregnant women attending antenatal clinics has been declining, from 9.5% in 2000 to 3.4% in 2008. Data from recent population-based surveys show that countries in southern Africa continue to be the epicentre of the HIV epidemic, with females more affected than males, although the differences vary across countries. On the whole, HIV prevalence rates are much higher in urban areas.

Significant progress has been made in the African Region in implementing HIV surveillance in accordance with the WHO/UNAIDS guidelines on second-generation surveillance systems. Most countries in the Region have increased the number of antenatal clinic sites for HIV surveillance. Every country in the Region with a generalized epidemic has implemented at least one round of a population-based HIV sero-behavioural survey. Among these, six have conducted

more than one round of such a survey, hence providing data that can be used to confirm HIV trends.

However, the limited availability of data on HIV among key populations at higher risk such as sex workers, people who inject drugs and men who have sex with men is a major surveillance gap in tracking the magnitude and trends in HIV infection among these groups. Despite the scarcity of data, the available information indicates high HIV prevalence among key populations at higher risk.

HIV testing and counselling

During the past four years, several countries in the Region have adopted policies for the continued scale up of HIV testing and counselling as recommended by WHO and have established programmes geared towards increasing access to and uptake of HIV testing and counselling services as part of the national response to HIV. Services have been considerably expanded through decentralization. Many of these programmes include innovative approaches to make HIV testing and counselling services more available and accessible to the population, including community-based door-to-door campaigns. Nevertheless, much remains to be done.

The 43 countries that reported providing HIV testing and counselling services in 2009 had 31 199 health facilities, demonstrating a continued increase in numbers since 2007. Public health facilities conducted more than 31 million HIV tests in 2009. However, despite the increases in availability and uptake of HIV testing and counselling services, more than 75% of the people aged 15–49 years in the African Region do not know their HIV status. More efforts need to be made to further expand HIV testing and counselling services to enable more people to learn their HIV status through a wider range of proven, safe and right-based options.

Contribution of health sector to HIV prevention

Since 2006, which was designated as the Year of Acceleration of HIV Prevention in the African Region, HIV prevention interventions have been seriously scaled up in the Region. Interventions related to the health sector are increasingly being implemented in most countries. However, in several countries, prevention interventions, including counselling and condom promotion, targeted at

key populations at higher risk are still limited in coverage, and stigmatization, discrimination and criminalization are still hampering the scaling up of interventions among key populations at higher risk. Condom use among young people is still low, and only three countries have attained a level of HIV knowledge of 50% in both men and women.

Medical male circumcision is now a major additional HIV prevention strategy for the health sector in the African Region. Thirteen countries in the Eastern and Southern Africa subregion whose HIV transmission rates and male circumcision status meet these criteria have since been encouraged and supported in efforts to urgently scale up male circumcision services. Male circumcision interventions for HIV prevention have already been scaled up in 12 of 13 priority countries in the Region.

HIV prevention and treatment for women and children

By the end of 2009, comprehensive accelerated plans for scaling up the prevention of mother-to-child transmission were being rolled out in 35 countries of the African Region, with a shift from donor-supported pilot projects to the implementation of comprehensive national plans. The percentage of pregnant women living with HIV who received antiretroviral drugs for preventing mother-to-child transmission in sub-Saharan Africa increased from 15% in 2005 to 45% in 2008 and 54% in 2009. Of 34 countries with disaggregated data, 25 reported using the more efficacious regimen as the treatment of choice for preventing the mother-to-child transmission of HIV in accordance with the WHO guidelines for preventing mother-to-child transmission.

In 2009, 431 295 infants born to mothers living with HIV in 45 reporting countries received antiretroviral medicine to prevent mother-to-child transmission. This 20% coverage is a slight increase from 17% in 2008. The number of children receiving antiretroviral therapy rose from 224 900 in 2008 to 296 000 in 2009, a 32% increase in one year. This represents an estimated coverage of 26% of the children who need antiretroviral therapy based on the 2010 WHO antiretroviral therapy guidelines for infants and children.

Despite the progress made, challenges still need to be addressed. These include weak monitoring systems that compromise the quality of data for tracking all interventions for preventing mother-to-child transmission, such as family planning, antiretroviral regimens used, early infant diagnosis and infant feeding practices for women living with HIV and for HIV-exposed infants. Procurement and supply management systems are weak, resulting in frequent

stock-outs of medicines and consumables, unreliable quantification and forecasting of antiretroviral medicine needs and low utilization of maternal, newborn and child health services, mainly during childbirth and postpartum, and of family planning services because of programmatic and system weaknesses. The coverage of services for preventing mother-to-child transmission in the Central Africa and Western Africa subregions is also very low, and accelerated efforts have to be made to scale up services in these subregions.

Scaling up treatment and care for people living with HIV

At the end of 2009, 3 912 000 people living with HIV were receiving antiretroviral therapy in the African Region, representing coverage of 37% of those in need and a great increase from 800 000 people in 2005. By the end of 2009, two countries, Botswana and Rwanda, had already achieved universal access to antiretroviral therapy. Benin, Ethiopia, Mali, Namibia, Senegal, Swaziland and Zambia reported coverage rates exceeding 50%. Antiretroviral therapy has been decentralized to 8278 health facilities in the Region, increasing from less than 2000 health facilities in 2005. The WHO Integrated Management of Adolescent and Adulthood Illnesses (IMAI) approach has been instrumental in decentralizing integrated HIV services. A survey WHO conducted during 2010 found that 96.8% of children and 97.5% of adults receiving antiretroviral therapy were receiving first-line regimens recommended by WHO.

The burden of tuberculosis (TB) and HIV coinfection is a major challenge in the African Region. Forty-one countries reported having plans to respond to the dual epidemic. More than 45% of people with TB received an HIV test, and 75% of those found to be living with HIV received co-trimoxazole preventive therapy. Antiretroviral therapy coverage among people living with HIV and TB increased but is still low at 37%.

Nevertheless, much remains to be done. Based on the new WHO criteria for when treatment should be initiated, most of the people in need still cannot access life-saving treatment. Substantially increasing access to treatment and care interventions beyond the current coverage of 37% requires innovative and efficient models. Integrating these services into existing sexual and reproductive health, maternal, newborn and child health, TB and community-based services will go a long way in increasing access and sustaining the scaling up process. Maintaining the quality of HIV treatment and care services as countries continue to decentralize is a priority to avoid high mortality rates and emerging drug resistance.

Looking forward

The African Region has made significant progress in scaling up HIV prevention, treatment, care and support in the past five years. The number of people newly infected with HIV is being reduced, AIDS-related deaths have been averted in many countries and more people living with HIV are living longer, healthy lives. The current momentum for scaling up HIV prevention, treatment, care and support needs to be sustained towards achieving the Millennium Development Goals. Core interventions need to be scaled up, including HIV testing and counselling, preventing mother-to-child transmission, safe medical male circumcision, preventing and controlling other sexually transmitted infections, using condoms and counselling for reducing risk, specifically focused on youth, and providing antiretroviral therapy. Stronger links need to be established between HIV prevention and treatment and to the implementation of the Treatment 2.0 initiative coordinated by UNAIDS and WHO

using the new WHO guidelines. Eliminating the mother-to-child transmission of HIV is a feasible goal if comprehensive services for preventing mother-to-child transmission are integrated with maternal, newborn and child health care and the promotion of sexual and reproductive health. Actively involving people living with HIV and communities in these efforts will be crucial.

Countries need to do more to address the prevention needs of vulnerable groups, including young people, serodiscordant couples, women and children, and of the key populations at higher risk. Attention should be given to establishing legal frameworks that aim at reducing stigma and discrimination and decriminalizing HIV transmission. Countries also need to strengthen the links between HIV programmes and other health areas. Linking programmes and integrating HIV into other key health services can potentially improve the efficiency and effectiveness of both HIV-specific and broader health investment.

1. INTRODUCTION

Since the WHO-led “3 by 5” Initiative began in 2003 (1), the world has witnessed an unprecedented expansion in access to selected health-sector interventions and services for HIV prevention, treatment, care and support in low- and middle-income countries (2). This expansion has also taken place in many of the 46 Member States of the WHO African Region (3), all but one of which are located in sub-Saharan Africa, the region that still bears the brunt of the global HIV burden. By the end of 2010, an estimated 22.5 million adults and children were living with HIV in sub-Saharan Africa. This represents 68% of the global total of 33.3 million adults and children living with HIV, although an estimated 12% of the total world population lives in sub-Saharan Africa (4).

The last update on the HIV epidemiological situation in the WHO African Region (5) was published in 2008, and the latest update on global progress towards achieving universal access to priority HIV interventions in the health sector was published in 2010 (2). This report updates the empirical data generated by HIV surveillance systems and reviews the progress made so far in expanding access to HIV prevention, treatment, care and support services in the African Region. This is in accordance with the strategic directions of WHO in the African Region 2010–2015 (6) and responds to the WHO core function of monitoring the health situation and assessing health trends.

Given its focus on the African Region, the report builds on and complements the global report *Towards universal access – scaling up priority HIV/AIDS interventions in the health sector* (2) by providing a more detailed regional and subregional perspective on progress made towards achieving universal access to HIV prevention, treatment, care and support. It focuses on interventions that are especially relevant to the epidemiological situation in countries of the Region, some of which are predominantly implemented in the Region. These include HIV testing and counselling, providing treatment and care, preventing mother-to-child transmission, carrying out male circumcision and ensuring blood safety. The report also identifies enabling factors and challenges in achieving universal access and the Millennium Development Goals and proposes specific actions that will help countries accelerate progress towards achieving these targets and goals.

Political commitment to halt and reverse the HIV epidemic continues to grow in the African Region. The United Nations General Assembly Political Declaration on HIV/AIDS in 2006 (7), the declaration of 2006 as a Year of

Acceleration of HIV Prevention in the African Region (8) by African health ministers and the adoption of the Brazzaville Commitment on Scaling Up towards Universal Access to HIV and AIDS Prevention, Treatment, Care and Support in Africa by 2010 (9) provided further impetus to efforts aimed at stopping the HIV epidemic in the Region. The adoption of the Ouagadougou Declaration on Primary Health Care and Health Systems (10), which reaffirmed the principles of the Declaration of Alma-Ata of September 1978, has forged a regional consensus on the need to further integrate HIV service delivery within the context of broader health system strengthening.

The increased investment in the HIV response by national governments, partners and multilateral and bilateral initiatives, including the Global Fund to Fight AIDS, Malaria and Tuberculosis (11) and the United States President’s Emergency Plan for AIDS Relief (12), have contributed to the progress being made in the response to HIV in the African Region.

The African Region has begun to see progress in the fight against the HIV epidemic, as reported in the *UNAIDS report on the global AIDS epidemic 2010* (4). Of the 10 countries in the Region accounting for 80% of the people living with HIV, the incidence of HIV infection declined by more than 25% in six countries (Ethiopia, Malawi, Mozambique, United Republic of Tanzania, Zambia and Zimbabwe) and stabilized in three countries (Kenya, Nigeria and Uganda) between 2001 and 2009. On the whole, the incidence of new HIV infections is decreasing in 22 countries (Botswana, Burkina Faso, Central African Republic, Congo, Côte d’Ivoire, Eritrea, Ethiopia, Gabon, Guinea, Guinea-Bissau, Malawi, Mali, Mozambique, Namibia, Rwanda, Sierra Leone, South Africa, Swaziland, Togo, United Republic of Tanzania, Zambia and Zimbabwe) and stabilizing in 11 countries (Angola, Benin, Cameroon, Democratic Republic of the Congo, Ghana, Kenya, Lesotho, Niger, Nigeria, Senegal and Uganda). The prevalence of HIV infection among adults aged 15–49 years decreased from 5.9% in 2001 to 5.0% in 2009.

Encouraging declines in HIV prevalence have been reported among people aged 15–24 years in some countries (13). Some of the countries with data on sexual behaviour have also reported increased condom use, increased age at sexual debut and fewer young people reporting multiple sexual partners. Although these downward trends cannot be attributed to specific prevention efforts, numerous factors probably play a role.

AIDS-related deaths are also decreasing in the Region. In 2009, 16 countries had declines in AIDS-related mortality, ranging from 11% in Congo to 72% in Rwanda (4). These declines reflect the increased availability of antiretroviral therapy and improved quality of care and support for people living with HIV. More deaths are expected to be averted when people living with HIV start treatment earlier according to the 2010 WHO recommendations on antiretroviral therapy (14).

Despite these gains, the health-sector response to HIV continues to face systemic bottlenecks and socioeconomic challenges in the Region. Qualified human resources for health are still in short supply in most countries. Despite significant investment in recent years, laboratory capacity and supply management systems remain inadequate. Insufficient financial resources and excessive dependence on international donors and partners continue to be a source of concern regarding the long-term sustainability of HIV interventions. High comorbidity levels resulting from diseases such as TB, frequent outbreaks of other communicable diseases and natural or human-made disasters further stretch already-weakened health systems. In addition, high levels of stigma and discrimination remain prevalent in most countries, and national legal frameworks are still unable or unwilling to effectively uphold the rights of all people to access high-quality HIV prevention, treatment, care and support services.

The high burden of HIV in the Region coexists alongside high maternal mortality rates and mortality rates among children younger than five years (15), exacerbating the negative impact of the epidemic on the Region's overall economic development and hampering its capacity to contribute more meaningfully to achieving other development objectives.

This regional report arrives as African leaders are preparing to participate in the United Nations General Assembly High Level Meeting on AIDS (16) in June 2011. Although most countries in the Region are unlikely to achieve the health-related Millennium Development Goals (17), the impressive programmatic gains and political momentum achieved in the last decade are important steps towards ultimately achieving universal access to HIV services, the effective elimination of mother-to-child transmission of HIV and the realization of the Millennium Development Goals by 2015 in the WHO African Region.

1.1 Data sources and methods

The data used in describing the HIV epidemiological situation are based on the most recent reports of HIV surveillance systems in the African Region, primarily from 2005 to 2009. These systems include surveillance

systems for HIV among pregnant women attending selected antenatal clinic and population-based HIV sero-surveys conducted in selected countries, including Demographic and Health Surveys. Additional data are drawn from special studies.

The data used in monitoring progress in the health sector interventions have been collected from countries through a common reporting tool developed by WHO, UNICEF and UNAIDS and aggregated at the global level. Data were nationally validated through stakeholder meetings in each reporting country and were subsequently reconciled and harmonized at the regional and global levels with data collected by other bilateral and multilateral partners. To ensure consistency with data published in previous annual editions of *Towards universal access: scaling up priority HIV/AIDS interventions in the health sector* (2), regional time series covering 2007, 2008 and 2009 for the 46 WHO African Region countries were extracted and retroactively constructed from the same global data repository. Data from population-based or special surveys are quoted from various sources, as indicated in the report.

The data collected encompass indicators on HIV testing and counselling; preventing the sexual transmission of HIV and the transmission of HIV through injecting drug use; managing sexually transmitted infections; coverage of antiretroviral therapy; coverage of collaborative HIV and TB services; and HIV interventions for women and children, including preventing mother-to-child transmission. Policy and programmatic issues related to HIV were also assessed to indicate their availability and coverage.

The number of countries providing data on the health-sector response to HIV continued to increase in 2009, with 45 of 46 countries submitting their reporting forms in the 2009 cycle. Algeria did not submit a national report. The response rates for individual indicators varied. Overall, there were few data on key populations at higher risk for HIV exposure and infection, such as people who inject drugs, sex workers and men who have sex with men, reflecting, among other issues, the limited capacity of the existing systems to effectively monitor trends in these subgroups.

The subregions used in this report – Eastern and Southern Africa, Central Africa and Western Africa – have been defined following the geographical distribution of countries used by the WHO Regional Office for Africa and might differ slightly from the regional categories used in the global progress report *Towards universal access: scaling up priority HIV/AIDS interventions in the health sector* (2).¹ As

¹ For instance, Somalia is not in the Eastern and Southern Africa subregion in this report but was included in this subregion in the global universal access progress report. Algeria has also been included in the Western Africa subregion, but other global reports often categorize it in North Africa.

such, statistical aggregates and averages may vary slightly as a result. In some sections, the Eastern Africa subregion and Southern Africa subregion are reported separately to illustrate the specific features of the HIV epidemic in these subregions. The countries in the subregions are as follows:

- Eastern Africa subregion: Eritrea, Ethiopia, Kenya, Rwanda, Seychelles, Uganda and United Republic of Tanzania;
- Southern Africa subregion: Comoros, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, South Africa, Swaziland, Zambia and Zimbabwe;
- Central Africa subregion: Angola, Burundi, Cameroon, Central African Republic, Chad, Congo, Democratic Republic of the Congo, Equatorial Guinea, Gabon and Sao Tome and Principe; and
- Western Africa subregion: Algeria, Benin, Burkina Faso, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Mauritius, Niger, Nigeria, Senegal, Sierra Leone and Togo.

1.2 Structure of the report

The report is structured as follows:

Chapter 1 provides background to and outlines the objectives of the report, the data sources and methods to describe the HIV epidemiological situation and to monitor progress made in the health sector interventions in the WHO African Region.

Chapter 2 provides an update of the empirical data generated by HIV surveillance systems in the WHO African Region.

Chapter 3 presents progress in expanding the availability and uptake of HIV testing and counselling in the WHO African Region.

Chapter 4 discusses progress in scaling up selected health sector interventions for HIV prevention in the WHO African Region.

Chapter 5 presents progress towards scaling up HIV prevention and treatment services for women and children in the WHO African Region.

Chapter 6 presents progress towards scaling up treatment and care for people living with HIV in the WHO African Region.

Chapter 7 draws conclusions from the report and presents a way forward for countries in the WHO African Region.

The annexes provide information on progress by countries.

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2. EPIDEMIOLOGICAL SITUATION OF HIV IN THE WHO AFRICAN REGION

Key findings

- Although HIV prevalence still remains high in the Region, the median HIV prevalence among pregnant women attending antenatal clinics declined from 9.5% in 2000 to 3.4% in 2008. Recent studies have also confirmed this trend.
- Countries in the Southern Africa subregion continue to be the epicentre of the HIV epidemic, with higher prevalence rates in the urban centres and women being more affected than males.
- There has been significant progress in implementing HIV surveillance in the Region, in accordance with the WHO/UNAIDS guidelines on second-generation surveillance systems.
- Most countries in the Region have increased the number of antenatal clinic sites for HIV surveillance. However, the frequency of conducting rounds of HIV surveillance varies greatly among countries.
- Every country with a generalized epidemic in the Region has implemented at least one round of a population-based HIV sero-behavioural survey. Among these, six have conducted more than one round of such a survey, hence providing data that can be used to confirm HIV trends.
- Limited availability of data on HIV among populations at higher risk such as sex workers, people who inject drugs and men who have sex with men is a major surveillance gap in tracking the magnitude and trends in the people living with HIV among these groups. Despite the scarcity of data, the available information indicate that the key populations at higher risk have high HIV prevalence.

Sub-Saharan Africa (which encompasses 45 of the 46 countries in the WHO African Region) continues to be the region worst affected by the HIV epidemic. Based on the most recent UNAIDS/WHO estimates (1), as of December 2009, the number of people living with HIV in sub-Saharan Africa was 22.5 million. This represented two thirds of the global number of 33.3 million, although only about 12% of the world's population lives in sub-Saharan Africa. Overall, the HIV prevalence among adults aged 15–49 years declined from 5.8% in 2001 to 5.0% in 2009, but the number of people living with HIV has continued to increase, up from 19.7 million in 2001 as a result of the momentum of the epidemic and growing population. In 2009, an estimated 1.8 million people became newly infected with HIV in sub-Saharan Africa. The epidemic peaked in the mid-1990s. The rate of people becoming newly infected in 2009 is 25% less than the peak rate.

The implementation of second-generation HIV surveillance systems (2) as recommended by WHO and UNAIDS has been the backbone for assessing the HIV epidemiological situation and for monitoring trends. Second-generation HIV surveillance systems aim to concentrate resources where they will yield information that is most useful in reducing the spread of HIV and in providing treatment and care for those affected. This means tailoring the surveillance system to the pattern of the epidemic in a country. It means concentrating data collection in key populations at higher risk of becoming newly infected with HIV: populations with high levels of risk behaviour or young people at the start of their sexual lives. It means comparing information on HIV prevalence and behaviour that spreads HIV to build up an informative picture of changes in the epidemic over time. It also means making best use of other sources of information. The key components of second-generation surveillance that have been central in monitoring the magnitude and trends in the African Region include HIV surveillance among pregnant women attending antenatal clinics, population-based HIV serosurveys and monitoring behavioural data, mainly from Demographic and Health Surveys. In this regard, the WHO Regional Office for Africa has supported all countries in the Region in establishing second-generation surveillance systems for monitoring the HIV epidemic in their respective countries.

This chapter updates the empirical data generated by HIV surveillance systems since the last HIV epidemiological surveillance report for the WHO African Region (3) was published in 2007. The focus is on assessing trends in HIV prevalence within countries and subregions. The determinants of and risk factors for HIV infection are not addressed.

2.1 Implementation of HIV surveillance systems

Most countries in the WHO African Region continue to implement HIV surveillance activities in accordance with the second-generation surveillance guidelines. Most countries in the WHO African Region are experiencing generalized epidemics (1). This means that HIV prevalence surveys among pregnant women attending antenatal care regularly are the major data source. The number of antenatal care sites being used for HIV sentinel surveillance has increased over time in most countries in the Region (Table 2.1). This has contributed to improving the representativeness of the HIV surveillance data generated.

The frequency of HIV sentinel surveys in pregnant women attending antenatal care varies greatly among countries. In Eastern and Southern Africa, seven countries consistently implemented rounds of HIV sentinel surveys from 2002–2003 to 2008–2009, whereas the numbers of countries with consistent implementation were three in Western Africa and one in Central Africa. Some countries have not implemented subsequent rounds of HIV antenatal care sentinel surveillance since 2005. These have implications for the overall quality of the surveillance data and the capacity to effectively monitor trends in HIV infection among pregnant women in countries.

In addition to antenatal care sentinel surveillance, most countries with generalized epidemics in the Region have conducted at least one population-based HIV survey (Table 2.2). Only Kenya and South Africa have completed three rounds of national population-based surveys since 2001; Burundi, Lesotho, Mali, Niger, Sierra Leone, the United Republic of Tanzania and Zambia have conducted two surveys. These repeated population-based surveys have been crucial in analysing trends in HIV infection and have provided valuable information on the effects of the HIV response in the Region.

There have been few data among key populations at higher risk of HIV exposure and infection despite the increasing evidence of the magnitude of HIV infection among these groups, even in countries with generalized epidemics (4). The implementation of representative sero-behavioural studies such as respondent-driven sampling or time-location sampling among these groups has been limited. This has affected the availability of data for tracking HIV epidemics and represents major HIV surveillance gaps among key populations at higher risk in this Region.

Although progress has been made in implementing second-generation surveillance in the Region, a recent study has

Table 2.1. Reported number of antenatal care sites and median HIV prevalence in the WHO African Region, 2002–2009

| Country | 2002-2003 | | 2004-2005 | | 2006-2007 | | 2008-2009 | |
|----------------------------------|-----------------|---------------------------|-----------------|---------------------------|-----------------|---------------------------|-----------------|---------------------------|
| | Number of sites | Median HIV prevalence (%) | Number of sites | Median HIV prevalence (%) | Number of sites | Median HIV prevalence (%) | Number of sites | Median HIV prevalence (%) |
| Angola | 10 | 3.1 | 25 | 2.4 | 36 | 2.7 | | |
| Burundi | 7 | 4.8 | 8 | 5.1 | 8 | 2.8 | | |
| Cameroon | 18 | 7.5 | | | | | 20 | 6.8 |
| Central African Republic | 13 | 13.5 | | | 23 | 6 | | |
| Chad | 16 | 4.6 | | | | | 5 | 2.5 |
| Congo | 3 | 6.0 | 12 | 4.4 | 17 | 4.1 | — | — |
| Democratic Republic of the Congo | 17 | 4.2 | 24 | 4.4 | 24 | 3.7 | 30 | 3.4 |
| Equatorial Guinea | 2 | 8.2 | | | | | 4 | 6.7 |
| Gabon | 8 | 7.5 | | | 14 | 6.4 | | |
| Sao Tome and Principe | | | 7 | 1.1 | | | 7 | 0.0 |
| Botswana | 21 | 37.4 | 22 | 30.1 | 24 | 33.0 | 24 | 32.1 |
| Eritrea | 12 | 1.8 | 15 | 1.9 | 15 | 0.7 | | |
| Ethiopia | 66 | 8.2 | 75 | 4.2 | 104 | 3.1 | | |
| Kenya | 35 | 8.0 | 36 | 5.1 | 36 | 5.1 | 41 | 5.6 |
| Lesotho | 6 | 28.4 | 10 | 2.3 | 10 | 14.2 | 14 | 2.4 |
| Madagascar | 94 | 0.18 | 12 | 0.0 | 46 | 0.0 | | |
| Malawi | 19 | 17.0 | 19 | 15.5 | 54 | 12.6 | | |
| Mozambique | 36 | 13.6 | 36 | 16.2 | 36 | 13.0 | | |
| Namibia | 21 | 22.5 | 24 | 18.0 | 29 | 19.0 | 35 | 17.1 |
| Rwanda | 24 | 4.6 | 30 | 3.0 | 30 | 3.4 | | |
| South Africa ^a | | 27.9 | 399 | 30.2 | 1415 | 29.4 | 1457 | 29.4 |
| Swaziland ^a | 17 | 38.6 | 17 | 42.6 | 17 | 39.2 | 17 | 42.0 |
| United Republic of Tanzania | 57 | 6.8 | 81 | 6.8 | | | | |
| Uganda | | | 24 | 5.2 | 22 | 7.1 | | |
| Zambia | 24 | 20.4 | 23 | 15.7 | 24 | 16.5 | 24 | 16.8 |
| Zimbabwe | 19 | 24.8 | 19 | 20.5 | 19 | 17.3 | 19 | 14.5 |
| Algeria | | | 10 | 0 | 14 | 0 | | |
| Benin ^a | 19 | | 50 | 2.1 | 50 | 1.7 | 53 | 2.0 |
| Burkina-Faso | 10 | 2.8 | 13 | 1.9 | 12 | 1.5 | 13 | 0.9 |
| Côte d'Ivoire | 28 | 7.1 | 35 | 4.0 | | | 38 | 2.2 |
| Gambia | 6 | 1.6 | 8 | 1.8 | 9 | 1.4 | | |
| Ghana | 29 | 3.6 | 40 | 2.8 | 40 | 2.6 | 40 | 2.9 |
| Guinea | — | — | 18 | 4.2 | | | 24 | 2.6 |
| Guinea-Bissau | 4 | 2.3 | 8 | 4.5 | 2 | 4.9 | | |
| Liberia | | | | | 15 | 6.2 | 18 | 3.9 |
| Mali | 16 | 3.8 | 15 | 2.9 | 18 | 2.4 | | |
| Mauritania | 7 | 0.9 | 8 | 0.9 | 10 | 0.4 | | |
| Niger | | | | | | | 8 | 1.6 |
| Nigeria | 86 | 4.3 | 160 | 3.9 | | | 158 | 3.4 |
| Senegal | 12 | 1.9 | 11 | 0.7 | 4 | 0.7 | | |
| Sierra Leone | 8 | 3.0 | | | 11 | 3.3 | 13 | 3.2 |
| Togo | 62 | 5.0 | 44 | 4.0 | 48 | 3.0 | 67 | 3.4 |

^a Site data not reported; crude prevalence reported.
Source: Database of the WHO Regional Office for Africa.

Table 2.2. Implementation of national population-based surveys in the WHO African Region, 2001–2009

| Country | Year of survey | Type of survey | Age group (years) |
|----------------------------------|----------------|-----------------------------------|------------------------|
| Mali | 2001 | Demographic and Health Survey | Women 15–49; men 15–59 |
| | 2006 | Demographic and Health Survey | Women 15–49; men 15–59 |
| Zambia | 2001–2002 | Demographic and Health Survey | Women 15–49; men 15–59 |
| | 2007 | Demographic and Health Survey | Women 15–49; men 15–59 |
| Burundi | 2002 | National survey | 12 and older |
| | 2007 | National survey | 1.5 and older |
| Niger | 2002 | National survey | 15–49 |
| | 2006 | Demographic and Health Survey | Women 15–49; men 15–59 |
| Sierra Leone | 2002 | National Survey | 15–49 |
| | 2008 | Demographic and Health Survey | Women 15–49; men 15–59 |
| South Africa | 2002 | National survey | 2 and older |
| | 2005 | National survey | 2 and older |
| | 2008 | National survey | 2 and older |
| Burkina Faso | 2003 | Demographic and Health Survey | Women 15–49; men 15–59 |
| Ghana | 2003 | Demographic and Health Survey | Women 15–49; men 15–59 |
| Kenya | 2003 | Demographic and Health Survey | Women 15–49; men 15–59 |
| | 2007 | National Survey | Women 15–64; men 15–64 |
| | 2008–2009 | Demographic and Health survey | Women 15–49; men 15–54 |
| United Republic of Tanzania | 2003–2004 | HIV/AIDS Indicator Survey | Women 15–49; men 15–59 |
| | 2007–2008 | Malaria and AIDS Indicator Survey | 15–49 |
| Cameroon | 2004 | Demographic and Health Survey | Women 15–49; men 15–59 |
| Equatorial Guinea | 2004 | National Survey | 15–49 |
| Malawi | 2004 | Demographic and Health Survey | Women 15–49; men 15–59 |
| Senegal | 2004 | Demographic and Health Survey | 15–49 |
| Lesotho | 2004 | Demographic and Health Survey | Women 15–49; men 15–59 |
| | 2009 | Demographic and Health Survey | Women 15–49; men 15–59 |
| Uganda | 2004–2005 | HIV/AIDS Indicator Survey | 15–59 |
| Cape Verde | 2005 | Demographic and Health Survey | 15–49 |
| Comoros | 2005 | National survey | 15–49 |
| Côte d'Ivoire | 2005 | HIV/AIDS Indicator Survey | 15–49 |
| Ethiopia | 2005 | Demographic and Health Survey | Women 15–49; men 15–59 |
| Guinea | 2005 | Demographic and Health Survey | 15–49 |
| Rwanda | 2005 | Demographic and Health Survey | Women 15–49; men 15–59 |
| Zimbabwe | 2005–2006 | National survey | 15–29 |
| Zimbabwe | 2005–2006 | Demographic and Health Survey | 15–49 |
| Benin | 2006 | Demographic and Health Survey | Women 15–49; men 15–59 |
| Central Africa Republic | 2006 | Multiple Indicator Cluster Survey | Women 15–49; men 15–59 |
| Swaziland | 2006–2007 | Demographic and Health Survey | 2 and older |
| Democratic Republic of the Congo | 2007 | Demographic and Health Survey | Women 15–49; men 15–59 |
| Liberia | 2007 | Demographic and Health Survey | 15–49 |
| Nigeria | 2007 | National Survey | Women 15–49; men 15–64 |
| Sao Tome and Principe | 2008–2009 | Demographic and Health Survey | Women 15–49; men 15–59 |
| Congo | 2009 | Demographic and Health Survey | 15–49 |
| Mozambique | 2009 | HIV/AIDS Indicator Survey | 15–64 |

shown that only half the countries in sub-Saharan Africa have fully functioning HIV surveillance systems, with most countries with concentrated and low-level HIV epidemics still lagging behind (5). This study further supports the conclusion that progress in implementing second-generation surveillance has been uneven among countries and that greater effort is needed to effectively monitor HIV infection and its trends in the WHO African Region.

2.2 Trends in HIV prevalence in the African Region

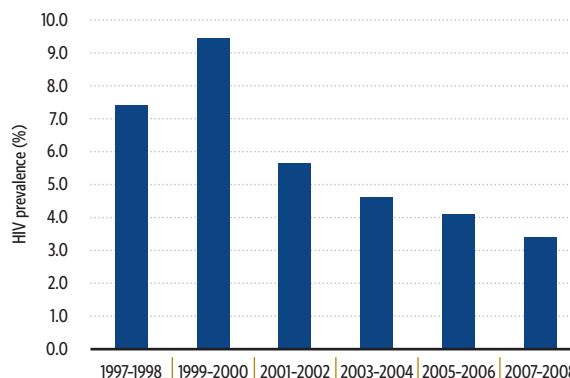
2.2.1 HIV prevalence among pregnant women attending antenatal care

The median HIV prevalence among pregnant women attending antenatal care has declined in the WHO African Region from 9.5% in 1999–2000 to 3.4% in 2007–2008 (Fig. 2.1).

HIV prevalence has been declining in the Southern Africa and Eastern Africa subregions but has stabilized in Central Africa and Western Africa (Fig. 2.2). This downward trend is supported by recent reports of declines in HIV infection among young women attending antenatal clinics in sub-Saharan Africa (6,7).

Fig. 2.3 illustrates the HIV prevalence trends in selected capitals in four subregions. In the Southern Africa subregion, HIV prevalence has declined since the early 2000s in Harare, Gaborone and Lilongwe, whereas the prevalence in Francistown and Maseru stabilized at high levels. In Eastern Africa, prevalence declines started earlier in the 1990s.

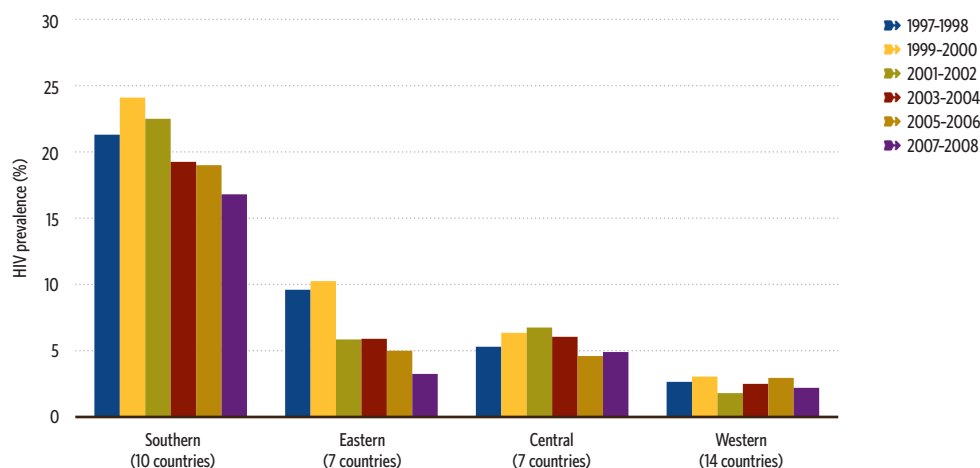
Fig. 2.1. Median HIV prevalence among pregnant women attending antenatal care, WHO African Region, 1997–2008



Source: Database of the WHO Regional Office for Africa.

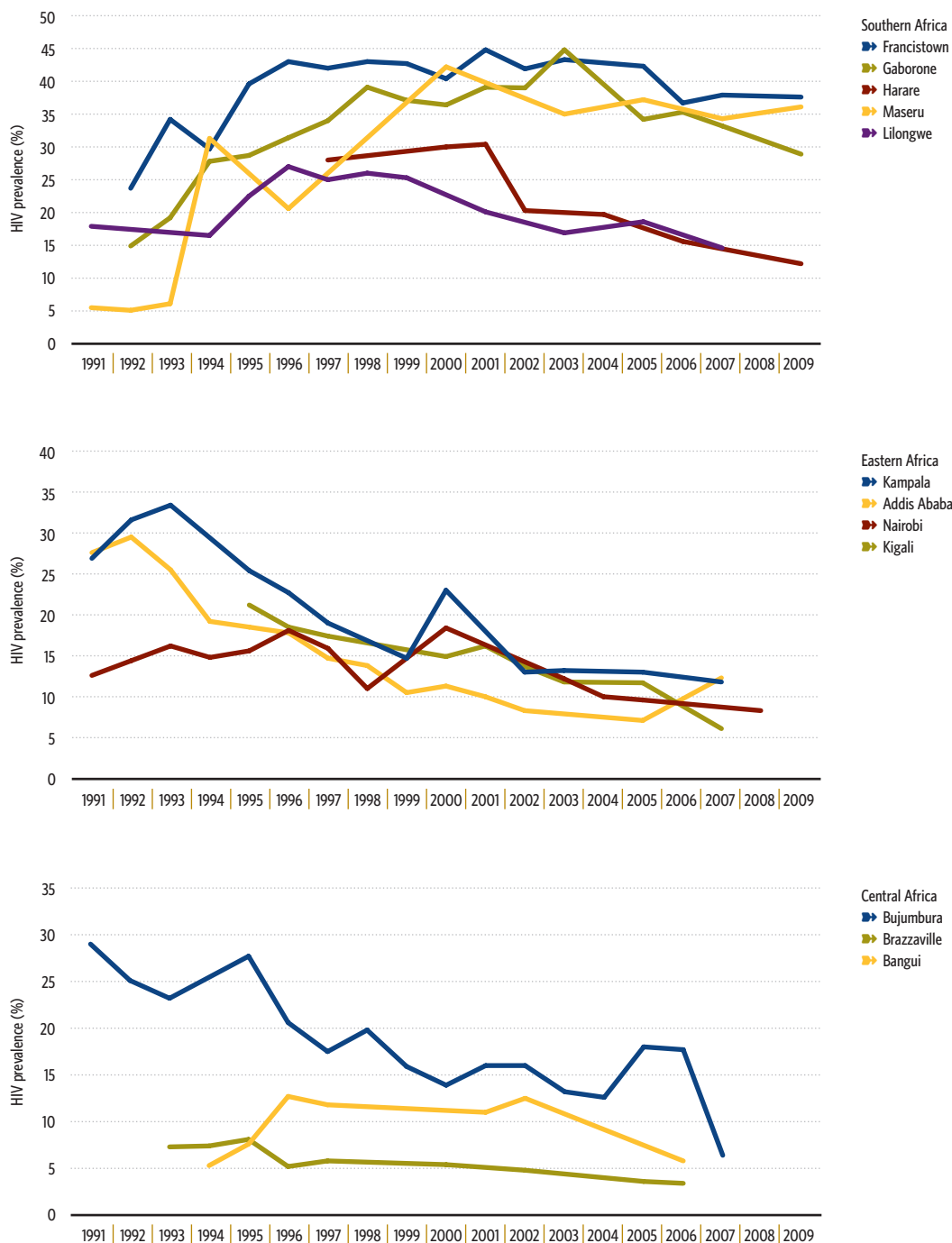
Monitoring of the HIV prevalence among pregnant women aged 15–24 years has been used as a proxy for monitoring trends in the numbers of people newly infected with HIV. Fig. 2.4 also shows downward trends in median HIV prevalence among women 15–24 years old attending antenatal care in selected countries in the African Region. A review showed declining prevalence among young women attending antenatal care in either rural or urban areas in 17 of the 21 countries (6). In 13 countries the decline was at least 25% between 2000 and 2008 in either urban or rural areas, with significant reductions in Botswana (urban and rural), Côte d’Ivoire (urban and rural), Ethiopia (urban), Kenya (both urban and rural), Malawi (urban), Namibia (urban and rural) and Zimbabwe (urban and rural).

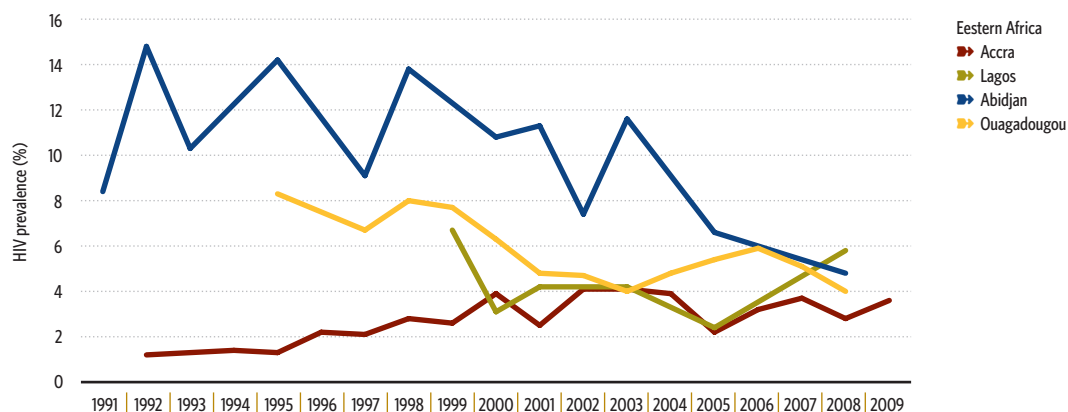
Fig. 2.2. Trends in median HIV prevalence among pregnant women aged 15–49 years attending antenatal care by subregion, WHO African Region, 1997–2008



Source: Database of the WHO Regional Office for Africa.

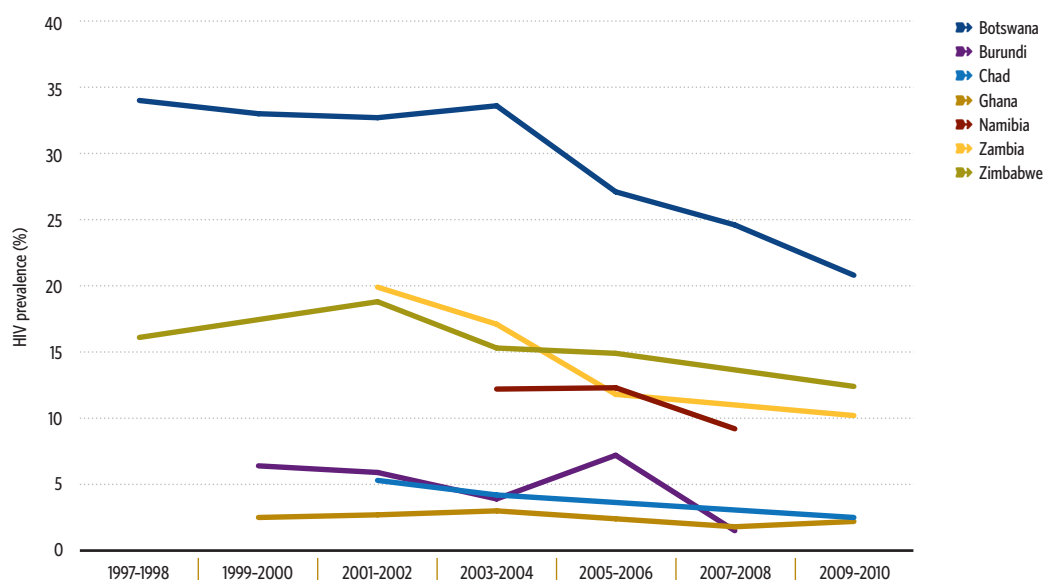
Fig. 2.3. Median HIV prevalence among pregnant women aged 15–49 years, selected capital cities, WHO African Region, 1991–2009





Source: Database of the WHO Regional Office for Africa.

Fig. 2.4. Trends in median HIV prevalence among pregnant women aged 15–24 years attending antenatal care in selected countries, WHO African Region, 1997–2010



Source: Database of the WHO Regional Office for Africa.

2.2.2 HIV prevalence in the general population

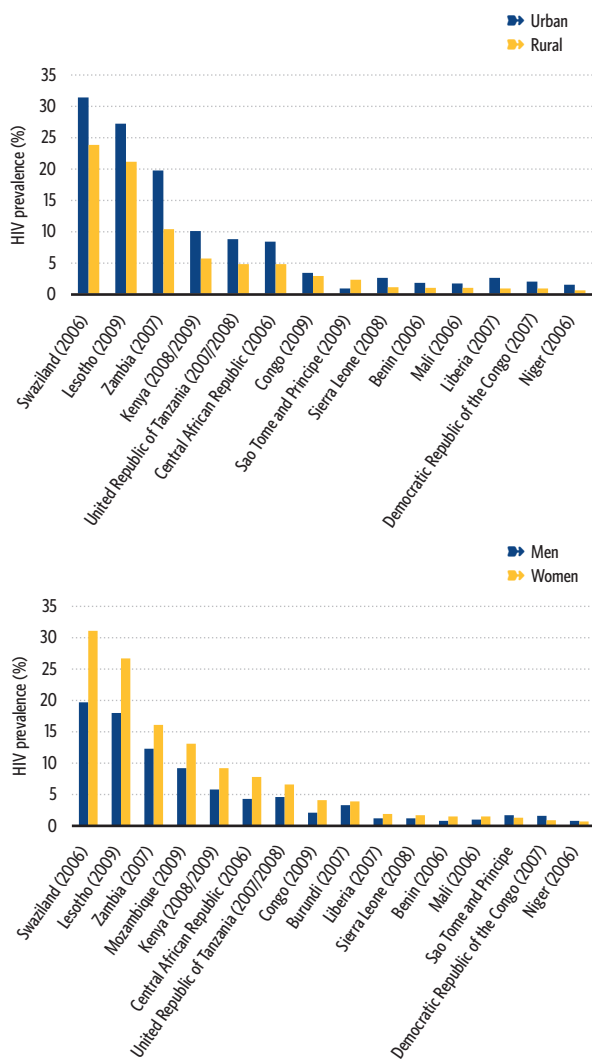
Data from recent population-based surveys show that countries in the Southern Africa subregion continue to be the epicentre of the HIV epidemic, with females more affected than males, although the differences vary across countries. On the whole, HIV prevalence rates are much higher in urban areas (Fig. 2.5).

In countries with repeated population-based surveys, there are indications of a decline in HIV prevalence among people 15–49 and 15–24 years old, except for South Africa among people 15–49 years old (Fig. 2.5–2.7). Of the seven countries with repeat national surveys between 2000 and 2008, the prevalence declined among women 15–24 years old in all

but South Africa; Botswana, South Africa, United Republic of Tanzania and Zimbabwe showed a decline among young men (8).

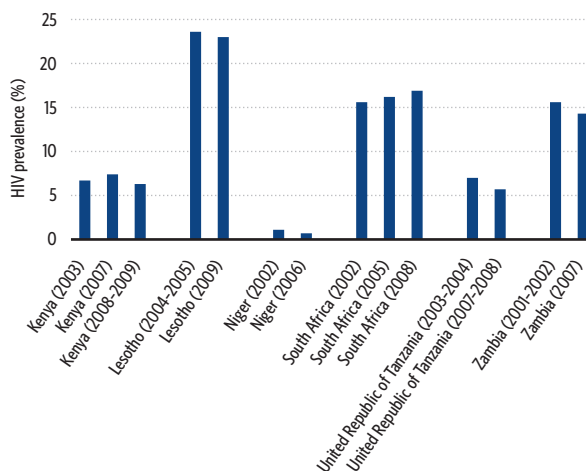
A comparison of HIV prevalence estimates from antenatal care surveys and national population-based surveys shows, as expected, that the prevalence among women attending antenatal care is generally higher than that in the general population (Fig. 2.8). Exceptions included Burundi, the Central African Republic and Kenya. The magnitude of the differences varies across countries, with the prevalence among people attending antenatal care more than twice the prevalence in the general population in the Democratic Republic of the Congo and Liberia.

Fig. 2.5. HIV prevalence among men and women aged 15–49 years in urban and rural areas in selected countries, WHO African Region, 2006–2009



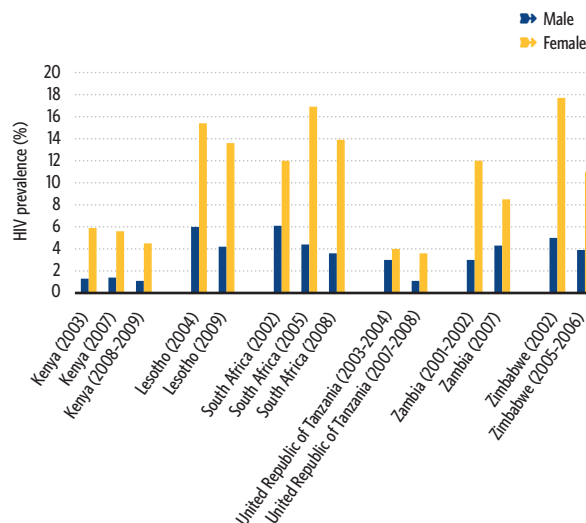
Sources: Country Demographic and Health Surveys, HIV/AIDS Indicator Surveys, Malaria and AIDS Indicator Surveys and national survey reports.

Fig. 2.6. HIV prevalence trends in the general population (adults aged 15–49 years), selected countries, WHO African Region



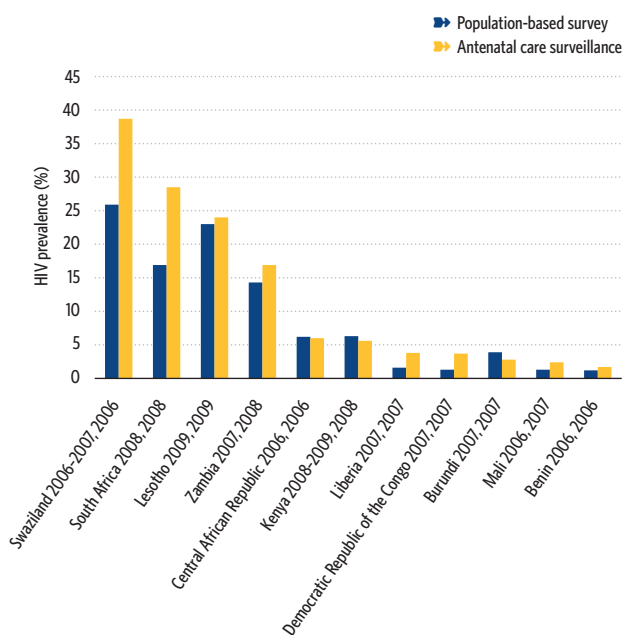
Sources: Country Demographic and Health Surveys, HIV/AIDS Indicator Surveys, Malaria and AIDS Indicator Surveys and national survey reports.

Fig. 2.7. HIV prevalence trends among men and women aged 15–24 years, selected countries, WHO African Region



Sources: Country Demographic and Health Surveys, HIV/AIDS Indicator Surveys, Malaria and AIDS Indicator Surveys and national survey reports.

Fig. 2.8. HIV prevalence among the general population (women and men) aged 15–49 years compared with the median HIV prevalence among pregnant women aged 15–49 years attending antenatal care in selected countries, WHO African Region, 2006–2009



Sources: Country Demographic and Health Surveys, HIV/AIDS Indicator Surveys, Malaria and AIDS Indicator Surveys and national survey reports.

2.2.3 HIV prevalence among key populations at higher risk

Adequately monitoring HIV prevalence trends among population groups at higher risk for HIV infection is essential; these include sex workers, people who inject drugs, men who have sex with men, prisoners and migrants. This is true not only in concentrated epidemics, in which specific groups tend to be most affected by HIV, but also in generalized epidemic settings, in which epidemiological dynamics intersect across population groups with different behaviour and risk profiles. In addition, adequate epidemiological monitoring is critical in responding adequately to the different realities faced by these key populations and in adopting strategies that can effectively increase access to testing, counselling, prevention, treatment, care and support services and interventions. Where targeted HIV prevention services are available, epidemiological monitoring in these groups can be used to assess the effects of interventions.

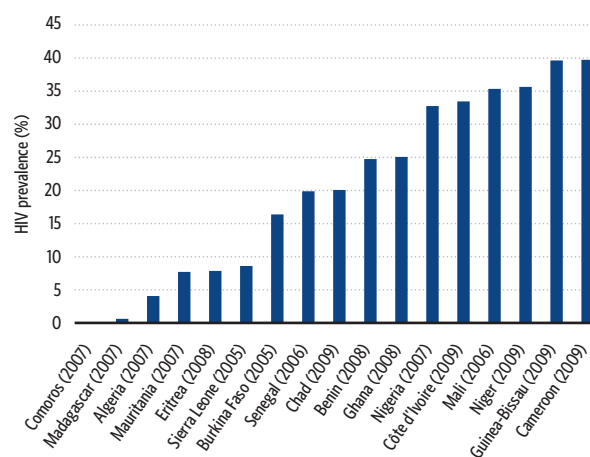
However, adequately conducting HIV surveillance and monitoring programmatic responses for these population groups is complex. Stigma, discrimination and laws that criminalize their behaviour create difficulty for such

individuals in many countries to seek health care, access preventive commodities to protect themselves and even participate in research studies. As such, data on the HIV prevalence in these groups remain scarce. This section discusses available data on HIV prevalence among female sex workers, men who have sex with men and people who inject drugs. Other populations monitored in some countries include military personnel, prisoners, truck drivers, people with sexually transmitted infections, miners and traders. Data on female sex workers were available from 19 countries, and 6 countries reported data on men who have sex with men. Three countries provided HIV prevalence data for people who inject drugs. Epidemiological monitoring in these groups is often ad hoc, and the available data come most frequently from localized studies or service delivery points.

The reported HIV prevalence was often high in all three groups. For the period 2005–2009, prevalence rates ranged from 0% in Comoros to 40% in Cameroon among female sex workers (Fig. 2.9). Among men who have sex with men, the reported HIV prevalence rates were equally high: 25% in Côte d'Ivoire (2009), 25% in Ghana (2006), 17% in Lesotho (2009), 17% in Mali (2007), 13% in Nigeria (2007) and 22% in Senegal (2007). Côte d'Ivoire reported HIV prevalence of 22% among people who inject drugs in 2009 and Mauritius 47%; in Nigeria, 6% of the people who inject drugs were living with HIV in 2007.

A few countries have conducted recent surveys among such populations as prisoners, truck drivers, people with sexually transmitted infections and miners. Table 2.3 shows the HIV prevalence in various population groups. In the countries in

Fig. 2.9. HIV prevalence among female sex workers, selected countries, WHO African Region, most recent year



Source: 2010 country reports of progress in following up the United Nations General Assembly Special Session on HIV/AIDS.

Table 2.3. HIV prevalence among selected population groups in selected countries, WHO African Region, 2006–2009

| Country | Population | Year | HIV prevalence (%) |
|--------------|---|------|--------------------|
| Algeria | People with sexually transmitted infections | 2007 | 2.4 |
| Eritrea | Male truck drivers | 2008 | 2.3 |
| Lesotho | Prisoners | 2009 | 17.0 |
| Mali | <i>Touts (coxeurs)</i> ^a | 2006 | 2.2 |
| | Truck drivers | 2006 | 2.6 |
| Mauritania | Prisoners | 2007 | 3.9 |
| Sierra Leone | Miners | 2008 | 1.1 |
| | Military | 2007 | 3.3 |
| | Police | 2007 | 5.8 |

^a People who assemble a certain number of passengers to fill a bush taxi or bus. Source: 2010 country reports of progress in following up the United Nations General Assembly Special Session on HIV/AIDS.

the Western Africa subregion, the prevalence was less than 5% in the various populations except among police officers in Sierra Leone in 2007. Except in Algeria and Mauritania, the HIV prevalence in these groups did not differ much from the prevalence among pregnant women attending antenatal care.

2.3 Challenges and the way forward

Despite the significant progress made in monitoring HIV prevalence, the limited quality of surveillance data pose a major challenge in ensuring the availability of reliable information in monitoring trends in HIV prevalence in the Region over time. Countries rarely report correct trend analysis such as nonparametric methods and linear regression applied to data from consistent sites. HIV surveillance data among children are also lacking, although such countries as Mozambique, South Africa and Swaziland included children from the age of two years in their population-based surveys. The use of data on preventing mother-to-child transmission for HIV surveillance among pregnant women has also been piloted in several African countries (8,9) and needs to be explored further.

Measuring trends requires repeated comparable surveys, but only a handful of countries in the Region have been able to complete two or more surveys. Modelling trends have been attempted, but frequent changes in model assumptions and software limit the comparability of data over time. Limited surveillance capacity to track key populations at higher risk in the countries with concentrated and generalized epidemics is also a challenge. Similarly, scarcity of resources presents a major barrier in conducting HIV surveillance, as some surveys such as AIDS Indicator Surveys can be costly and have often required support from external partners.

The surveillance of HIV mortality has not yet improved in the Region. Most of the data related to HIV deaths and mortality trends are not empirical and are mainly derived from mathematical modelling. The accuracy of such modelled mortality estimates often remains debatable. This underscores the importance of revitalizing vital registration systems to understand the causes of deaths, including those related to HIV, and their trends.

In the midst of rapid scale-up and access to HIV treatment and care, prevalence measures have increasingly become less effective in tracking trends and the progression of the HIV epidemic. Incidence measures are therefore critical in monitoring the transmission of new HIV infection and HIV programme effectiveness (10). Efforts in measuring HIV incidence continue but with myriad challenges. Laboratory measures such as the BED™ enzyme immunoassay have been used, but their feasibility for routine use is still under discussion (10). Modelling using software such as Spectrum is common, but the output depends on the quality of the data and the assumptions of the models. Proxy measures, especially trends in HIV infection among people aged 15–24 years, have also been used in several countries and seem to be the most widely used method for tracking new HIV infections in the general population. The establishment of the WHO Global HIV Incidence Working Group has been an important step in realizing new methods for measuring incidence.

Although surveillance of sexually transmitted infections is an important component of second-generation surveillance, it still lags behind in most countries in the Region. Data on syphilis testing among pregnant women are often inconsistent. The ongoing global efforts to eliminate congenital syphilis will only be achieved if surveillance of sexually transmitted infections is strengthened in the Region.

In the short term, standardized approaches for measuring HIV incidence are critically needed to enable countries to effectively monitor HIV transmission and assess the effects of the HIV interventions. Reinvigorating the surveillance of sexually transmitted infections as an early warning indicator for HIV transmission and an important part of the regional elimination of congenital syphilis is important. Countries should also use funds from donors such as the Global Fund to Fight AIDS, Tuberculosis and Malaria, which allocates 7–10% of grants for HIV monitoring and evaluation to strengthen HIV surveillance systems.

In the medium term, the use of new surveillance strategies to enhance data quality is crucial. This includes standard guidance on the use of data on preventing mother-to-child transmission for HIV surveillance for the countries that choose to use this approach. Repeated HIV surveillance among key populations at higher risk will be required to

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track and understand the magnitude and trends in HIV among these groups. Triangulating HIV data in the context of “know your epidemic” in accordance with the updated WHO/UNAIDS second-generation surveillance will enable countries to stay ahead of their epidemics and take prompt action for HIV prevention. In addition, the WHO Regional Office for Africa through the African Health Observatory will support all countries in generating and using relevant information for monitoring the HIV epidemic in the Region.

Long-term measures should focus on reviving HIV case and mortality surveillance. Given the importance of early infant diagnosis and limited HIV surveillance data among children in the Region, HIV case surveillance among infants might be critical. Similarly, in collaboration with relevant institutions, strengthening and using vital registration systems to generate HIV mortality data should be a priority.

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3. HIV TESTING AND COUNSELLING

Key findings

- The 43 countries that reported providing HIV testing and counselling services delivered these in 31 199 health facilities in 2009, demonstrating a continued increase in numbers since 2007.
- Public health facilities conducted more than 31 million HIV tests in 2009.
- Despite the increases in availability and uptake of HIV testing and counselling services, more than 75% of people aged 15–49 years in the African Region do not know their HIV status.

High-quality HIV testing and counselling services are the gateway to universal access to HIV prevention, treatment, care and support. They are a critical entry point to deliver, at an individual level, essential tailored prevention messages and information. People who test HIV-negative can receive counselling on how to reduce their risk of exposure to HIV and stay negative. For people living with HIV, knowing one's serostatus enables the timely initiation of treatment and care and is the only way to ensure that the benefits of antiretroviral therapy are maximized. As such, expanding the availability and uptake of HIV testing and counselling must go hand in hand with increased access to prevention, treatment, care and support interventions.

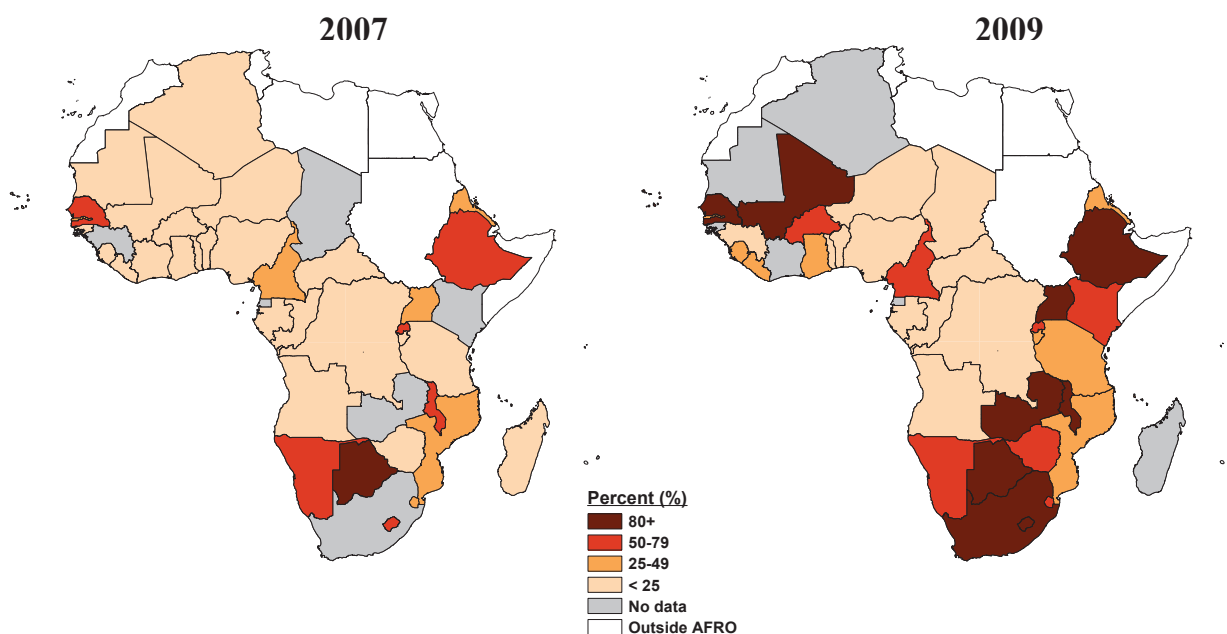
Since 2007, when WHO issued a statement recommending the adoption of a policy on provider-initiated testing and counselling, countries have continued to strive to use the approach to increase the uptake of HIV testing and counselling (1). To adapt responses to local realities and circumstances, WHO encourages countries to decentralize HIV testing and counselling services and provide them in a wide variety of settings – including health facilities, community-based locations and the workplace (2). Moreover, multiple approaches should be deployed, including, for

instance, mass-media campaigns and outreach services such as mobile units. Services should also be made available outside normal working hours, and countries should strive to remove any financial barriers to testing and related services. Family and partner HIV testing and counselling approaches should be promoted as well.

During the past four years, several countries in the African Region have adopted policies for continuing to scale up HIV testing and counselling as recommended by WHO and have established programmes geared towards increasing access to and the uptake of HIV testing and counselling services as part of the national response to HIV. Services have expanded considerably through decentralization. Many of these programmes include innovative approaches to make HIV testing and counselling services more available and accessible to the population, including community-based door-to-door campaigns. Nevertheless, much remains to be done.

Seven countries in sub-Saharan Africa have conducted population-based surveys and reported comparable data on HIV testing rates in 2007 and 2008, with median percentages of 30% among women and 17% among men

Fig. 3.1. Percentage of health facilities that offer HIV testing and counselling services, WHO African Region, 2007 and 2009



(3). Further, a median of 19% of women and 10% of men reported having received an HIV test and the test results in the 12 months preceding the survey. Comparison of this information with information from population-based surveys in 2005 and 2006 shows an increasing trend.

This chapter of the report reviews the progress made by countries in the WHO African Region between 2005 and 2009 in making available HIV testing and counselling services and discusses some of the novel and innovative approaches being used.

3.1 Availability of HIV testing and counselling services

The total number of health facilities providing HIV testing and counselling services increased further in the WHO African Region in 2009. Among 43 reporting countries, 31 199 facilities offered HIV testing and counselling services as of December 2009. In a subset of 33 countries that reported consistently during 2007-2009, the number of health facilities providing these services rose by 86% in the period, from 10 644 in 2007 to 20 740 in 2009 (Annex 1).

Although the availability of HIV testing and counselling increased, it remained uneven across countries and subregions. In Eastern and Southern Africa, more than 75% of health facilities provided HIV testing and counselling services in 2009 versus 19% for Central Africa.

Some countries, such as Burkina Faso, Cape Verde, Central African Republic, Côte d'Ivoire, Mali, Senegal, Sierra Leone, Swaziland and Togo, achieved remarkable increases (>200%) in the number of health facilities offering HIV testing and counselling from 2007 to 2009.

Only one country (Botswana) provided HIV testing and counselling services in more than 80% of health facilities in 2007, but this increased to 12 in 2009 (Botswana, Cape Verde, Ethiopia, Lesotho, Malawi, Mali, Sao Tome and Principe, Senegal, South Africa, Uganda, Zambia and Zimbabwe) (Annex 1).

Chad, the Democratic Republic of the Congo, Guinea and Nigeria had the lowest levels of availability of HIV testing and counselling services, with less than 2 health facilities per 100 000 adult population offering HIV testing and counselling services in 2009. In contrast, Botswana, Cape Verde, Sao Tome and Principe and Seychelles reported the highest levels of service availability in the WHO African Region. In all four countries, more than 50 health facilities per 100 000 adult population provided HIV testing and counselling services in 2009.

3.2 Uptake of HIV testing and counselling services

In 2009, public facilities performed about 40 million HIV tests among people aged 15 years or older across the Region, representing almost 60% of all such tests among this age group worldwide (3). In the subset of 39 countries that reported, the total number of HIV tests performed in health facilities increased from 19 million in 2008 to more than 31 million in 2009 – about 70% more in one year. Table 3.1 shows the number of tests performed for people 15 years and older and the number of HIV tests among this age group per 1000 people for 2008 and 2009 by country and subregion. The rate of HIV testing and counselling per 1000 people has also increased in most of the countries that reported for both 2008 and 2009.

In 2009, the highest uptake level was observed in Eastern and Southern Africa, with 182.9 tests per 1000 adult population, followed by the Western Africa and Central Africa subregions, with 58.3 and 47.6 tests per 1000 adult population, respectively.

Rwanda had the highest level of testing and counselling uptake, with almost 393.8 tests per 1000 adult population in 2009. The equivalent figure in Mauritania was considerably lower, reaching only 5.7.

Table 3.1. Number of HIV tests performed among people age 15 years and older and number of tests per 1000 population in 2008 and 2009 among countries in the WHO African Region that reported for both years

| Subregion and country | 2008 | | 2009 | |
|----------------------------------|--|--|--|--|
| | Number of people aged 15+ years who were tested for HIV and received results | Number of people aged 15+ years who were tested for HIV and received results per 1000 population | Number of people aged 15+ years who were tested for HIV and received results | Number of people aged 15+ years who were tested for HIV and received results per 1000 population |
| Burundi | 236 988 | 57.3 | 281 959 | 65.6 |
| Cameroon | 866 083 | 93.9 | 450 022 | 47.6 |
| Central African Republic | 56 177 | 27.1 | 136 202 | 64.2 |
| Chad | 53 056 | 10.8 | 66 191 | 13.1 |
| Congo | 79 422 | 45.2 | 82 332 | 45.8 |
| Democratic Republic of the Congo | 393 000 | 13.8 | 392 491 | 17.7 |
| Sao Tome and Principe | 20 360 | 259.3 | 13 212 | 164.8 |
| Central Africa | 1 705 086 | 45.2 | 1 422 409 | 47.6 |
| Botswana | 218 313 | 209.6 | 330 159 | 311.0 |
| Comoros | 2 570 | 7.5 | 3 281 | 9.4 |
| Eritrea | 137 339 | 55.6 | 132 829 | 52.2 |
| Ethiopia | 4 817 100 | 129.3 | 6 630 647 | 172.3 |
| Kenya | 1 833 689 | 97.5 | 4 433 557 | 230.0 |
| Lesotho | 213 521 | 216.1 | 251 242 | 250.6 |
| Madagascar | 629 642 | 70.1 | 324 809 | 35.0 |
| Malawi | 1 693 923 | 258.0 | 1 449 645 | 213.7 |
| Namibia | 163 871 | 149.3 | 249 011 | 221.0 |
| Rwanda | 1 241 616 | 259.2 | 1 932 420 | 393.8 |
| Seychelles | 8 858 | 192.3 | 10 808 | 233.4 |
| Swaziland | 108 334 | 186.3 | 149 755 | 251.3 |
| Uganda | 2 015 057 | 146.3 | 2 363 468 | 165.1 |
| United Republic of Tanzania | 2 503 664 | 128.6 | 1 970 324 | 98.3 |
| Zambia | 511 266 | 90.9 | 1 582 621 | 273.9 |
| Zimbabwe | 803 502 | 130.3 | 1 142 052 | 182.9 |
| Eastern and Southern Africa | 12 085 165 | 138.3 | 22 956 628 | 217.3 |
| Benin | 312 418 | 77.0 | 280 982 | 67.0 |
| Burkina Faso | 424 758 | 60.0 | 602 961 | 82.6 |
| Cape Verde | 17 000 | 64.9 | 25 075 | 93.5 |
| Côte d'Ivoire | 311 145 | 31.9 | 727 290 | 72.5 |
| Gambia | 44 127 | 56.6 | 47 549 | 66.0 |
| Ghana | 467 936 | 39.9 | 1 253 312 | 104.4 |
| Guinea | 67 275 | 14.7 | 74 090 | 15.8 |
| Guinea-Bissau | 21 061 | 29.3 | 24 871 | 33.8 |
| Liberia | 63 442 | 35.5 | 80 295 | 43.0 |
| Mali | 116 361 | 19.3 | 255 835 | 41.3 |
| Mauritania | 15 444 | 9.5 | 9 498 | 5.7 |
| Niger | 130 354 | 20.9 | 358 071 | 55.6 |
| Nigeria | 2 241 727 | 31.4 | 2 570 386 | 35.1 |
| Senegal | 245 670 | 42.0 | 352 197 | 58.3 |
| Sierra Leone | 157 120 | 58.7 | 281 218 | 102.7 |
| Togo | 181 679 | 57.3 | 166 887 | 51.1 |
| Western Africa | 4 817 517 | 37.7 | 7 110 517 | 57.0 |
| African Region | 18 607 768 | 58.7 | 31 489 554 | 67.0 |

3.3 Coverage of HIV testing and counselling

Coverage of HIV testing and counselling in the general population can be assessed using population-based surveys, such as Demographic and Health Surveys or national HIV/AIDS Indicator Surveys, in which respondents report whether they have been tested for HIV in the 12 months preceding the investigation and whether they have ever been tested for HIV.

Since 2003, an increasing number of countries have conducted such surveys in the African Region (4). Data from countries in which recent (2007–2009) national population surveys have been conducted show that a median of 13% of women and 8% of men in the Region report having had an HIV test in the 12 months preceding the surveys, and the median number of people who report having ever tested is 26% for women and 19% for men.

Among countries conducting population-based surveys in the Region, Kenya has high HIV testing and counselling coverage, with 58% of women and 42% of men having ever received an HIV test and 22% of men and 29% of women having been tested in the 12 months preceding the survey. In Lesotho, 66% of women and 37% of men have ever received an HIV test, and 42% of women and 25% of men received an HIV test in the 12 months preceding the 2009 Demographic and Health Survey. Countries such as Namibia, South Africa and the United Republic of Tanzania have also ramped up HIV testing and counselling services, with testing rates in the past 12 months near or above 20% for both men and women. Nevertheless, these figures also indicate that considerable additional efforts must be made to expand the coverage of HIV testing and counselling across the continent.

In most countries, fewer men than women report having taken an HIV test. This gender gap may result from increased access to and uptake of HIV testing and counselling by women because of programmes that test women during pregnancy to prevent the transmission of HIV from mother to child. Concerted attention and efforts are needed in this area. Strategies for involving men and testing partners within programmes for preventing mother-to-child transmission can help narrow the gap.

Trends over time can be preliminarily assessed in several countries in which repeated population-based surveys have been conducted. In Congo, the percentage of adults aged 15–49 years ever tested more than doubled between 2005 and 2009, growing from 10% to 26% among women and from 12% to 21% among men. The percentage of adults tested in the past 12 months preceding the survey increased from 3% to 7% among men and from 3% to 8% among women.

Uganda has a similar pattern, with the percentage of adults aged 15–49 years ever tested also doubling in the same time frame. In South Africa, the percentage of adults tested during the past 12 months doubled between 2005 and 2008, from 10% to 20% among men and from 13% to 29% among women.

3.4 Expanding HIV testing and counselling through novel mechanisms and approaches

In addition to provider-initiated testing and counselling, other HIV testing and counselling service outlets or models are being developed and implemented to further diversify service delivery, facilitate access and allow as many people

Box 3.1. Leveraging national campaigns to increase HIV testing and counselling in Lesotho

Lesotho faces one of the world's most serious generalized HIV epidemics, with an estimated prevalence of 24% among people aged 15–49 years. In 2006, the Government of Lesotho launched a campaign to increase the availability and uptake of HIV testing and counselling within a comprehensive approach that integrated HIV prevention, treatment, care and support and a goal "to contribute to halting and reversing the spread of HIV in Lesotho". In the Know Your Status campaign, HIV testing and counselling was recognized as the centre of this approach, serving as an entry point to other HIV services.

The Know Your Status campaign sought to offer HIV testing and counselling to every person in Lesotho older than 12 years of age and referral to appropriate post-test services. The Government of Lesotho, bilateral and multilateral partners, nongovernmental organizations and other civil society groups developed the campaign's operational plan jointly.

The programme resulted in a fivefold increase in the number of tests performed over four years, an accomplishment that was accompanied by a concomitant rise in access to antiretroviral therapy (5). Importantly, a significant percentage (23%) of all tests were conducted in community-based settings, thus improving geographical access.

In addition to higher coverage, the Know Your Status campaign helped establish a legal environment that supports access to testing and counselling services and protects the rights of citizens. A significant proportion of the population now recognizes the Know Your Status brand name, and it is believed to be an important driving force in creating demand for HIV testing and counselling services.

Source: Know Your Status HIV campaign receives praise for the accomplishments accomplished in Lesotho (5).

Box 3.2. Couple testing in Rwanda

In 2009, Rwanda promoted a family-centred approach to HIV prevention, treatment, care and support services with a focus on involving men in preventing mother-to-child transmission. The following strategies were used: high-level advocacy with the involvement of high-level leaders, building the capacity of health care workers on HIV counselling and testing for couples, public awareness campaigns on couple testing, introducing partner testing indicators in performance contracts with local authorities and government, introducing invitation letters for male partners and organizing weekend HIV counselling and testing sessions.

As a result, the uptake of HIV testing among male partners reached an average of 85% in 2009, up from 7% in 1999 (6).

Box 3.3. Expansion of antiretroviral therapy and HIV testing and counselling campaign in South Africa

During World AIDS Day 2009, the President of South Africa made announcements on strategies for strengthening the HIV and AIDS programme geared towards increasing number of South Africans knowing their HIV status and increasing access to antiretroviral therapy services.

The objectives of the national HIV testing and counselling campaign and antiretroviral therapy expansion were to mobilize people to know their status and take appropriate action to improve their quality of life; support people with key prevention messaging to encourage them to take proactive steps towards a healthy lifestyle, irrespective of HIV status; increase the incidence of health-seeking behaviour; and increase access to treatment, care and support services.

The specific objectives and deliverables of the presidential announcement included a massive campaign to mobilize all South Africans to get tested for HIV and to ensure that every South African knows his or her HIV status, increased access to treatment and care for children younger than one year of age who test positive for HIV; initiation of antiretroviral therapy among people with both TB and HIV infection, with treatment under one roof; treatment for pregnant women living with HIV to prevent mother-to-child transmission or for their own health; and all the health institutions in the country should be able to provide HIV counselling, testing and treatment.

The targets included all sexually active individuals older than 12 years. A total of 15 million people were targeted for HIV testing and counselling in all the districts by the end of June 2011 in all the provinces within 18 months. All 4500 public health facilities were also targeted to be providing antiretroviral therapy services, and the campaign also targeted enabling all eligible people living with HIV to receive treatment by June 2011.

as possible to learn their HIV status within a short period. These include the Know Your Status campaign implemented in Lesotho (Box 3.1) and couple testing in Rwanda (Box 3.2).

Other initiatives can also help expand the coverage of HIV testing and counselling among marginalized and harder-to-reach groups (7). In all epidemiological settings, specific population groups at higher risk of HIV infection, such as sex workers and their clients, people who inject drugs, men who have sex with men, prisoners, migrants and refugees, often have their access and utilization of health services hampered by high levels of stigma and discrimination. Under these circumstances, targeted HIV testing and counselling services for populations at higher risk of HIV infection may help lessen these barriers and improve testing uptake (8). Nevertheless, additional operational research is needed to enhance the design of tailored policies and interventions that create enabling environments for HIV testing and counselling for all individuals.

High-level political commitment with bold and novel approaches supports large populations in getting to know their HIV status. Such an initiative is the HIV counselling and testing campaign in South Africa, in which the country's highest level of leadership called for massive investment of resources to ensure that 15 million South Africans would be tested in 18 months (Box 3.3). This initiative also provided for HIV testing and counselling to be used as a gateway to obtaining HIV prevention treatment and support services, as it was also linked to a programme to expand antiretroviral therapy.

3.5 Challenges and the way forward

Despite the increases in availability and uptake of HIV testing and counselling services, more than 75% of people aged 15–49 years in the African Region do not know their HIV status (4).

Challenges remain related to: inadequate human resource capacity for HIV testing and counselling; inadequate funding for programmes; limited access for key populations at higher risk of HIV infection; high levels of stigma and discrimination; weak systems for monitoring and evaluating HIV testing and counselling services; and the need for standardized training of service providers.

More efforts need to be made to further expand HIV testing and counselling services to enable more people to learn their HIV status through a wider range of proven, safe and rights-based options. Countries are encouraged to adopt the WHO guidance on provider-initiated HIV testing and counselling in health facilities to increase uptake and improve access to HIV health services. Maternal, newborn and child health settings, sexually transmitted infection clinics, men's health clinics, immunization outlets, TB clinics, inpatient wards, outpatient clinics and client-initiated testing centres should all be used as opportunities for expanding HIV testing and counselling services in the health sector. Additional resources need to be mobilized.

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4. MAXIMIZING THE CONTRIBUTION OF THE HEALTH SECTOR TO HIV PREVENTION

Key findings

- Since 2006, which was declared as the Year of Acceleration of HIV Prevention in the African Region, the scaling up of HIV prevention interventions has become a reality in the Region. Interventions related to the health sector are increasingly being implemented in most countries.
- The prevalence of HIV among sex workers is still high in most countries. However, it has been documented in some countries that counselling and condom use among sex workers and their clients have contributed to reducing the burden of sexually transmitted infection and slowing down the HIV epidemic.
- Data on men who have sex with men are limited, but some specific studies suggested an HIV prevalence among men who have sex with men exceeding 43% in Kenya, 13% in Uganda and 46% in Togo.
- Fifteen countries of the 46 in the Region identified injecting drug use as a driving factor the HIV epidemic. Available data suggest that the percentage of people who inject drugs who are living with HIV ranges from 2% in Madagascar to 47% in Mauritius.
- Stigmatization, discrimination and criminalization are still hampering the scaling up of interventions among key populations at higher risk.
- Condom use among young people is still low: 47% among young men and 32% among young women aged 15–24 years. Only three countries have attained a level of HIV knowledge of 50% among both men and women.
- Most of the 13 priority countries have adopted male circumcision as a method of preventing HIV transmission, and most have national policies and/or strategies for scaling up.
- In 2009, 40 countries declared testing 100% of blood for HIV before transfusion.

The HIV response in the WHO African Region has started yielding positive results, as the numbers of people newly infected with HIV declined by 25% from 2001 to 2009 in 22 countries¹(1). Significant reductions in HIV incidence, especially among women aged 15–24 years, have been documented in some countries (2). Behavioural change has been effective in reducing the HIV prevalence among young people (3). The predominant sources of people acquiring HIV infection in the Region are unprotected heterosexual intercourse and mother-to-child transmission. Having multiple casual sexual partners is still the greatest risk factor in addition to low condom use with non-regular partners, early

sexual debut among young people and discordant couples in long-term relationships. HIV is transmitted to newborns and babies during pregnancy, labour and breastfeeding (4). Increasing evidence indicates that key populations at higher risk such as people who inject drugs, sex workers and men who have sex with men account for a significant proportion of the people acquiring HIV infection (5).

Successfully carrying out HIV prevention interventions requires multiple actions contributed by various sectors through a coordinated multisectoral approach. The health sector plays a key role in this approach, as it usually represents the largest portion of interventions in the national response to HIV and AIDS and provides technical guidance and contributions to other sectors.

In 2010, WHO published an updated *Priority interventions: HIV/AIDS prevention, treatment and care in the health sector* (6). The publication covers two main areas: (1) enabling people to know their HIV status and (2) maximizing the contribution of the health sector to HIV prevention. This chapter covers the second area. Chapter 3 of this report covers the first area.

The areas related to maximizing the contribution of the health sector to HIV prevention include preventing the sexual transmission of HIV, interventions for people who inject drugs, preventing HIV infection among infants and young children and preventing HIV transmission in health settings. Each of these areas includes various prevention interventions to be implemented in the health sector (Box 4.1). This chapter focuses on sex workers, men who have sex with men, people who inject drugs, HIV prevention for young people, male circumcision, blood safety and new HIV prevention technologies.

4.1 Developing policies and programmes

Recognizing the alarming trend in HIV incidence in the Region and the need to increase measures to control further progress of the epidemic, the WHO Regional Committee for Africa adopted resolution AFR/RC55/R6 on acceleration of HIV prevention efforts in the African Region in August 2005 (7). In November 2005 in Brazzaville, the regional directors of UNAIDS, UNDP, UNESCO, UNFPA, UNICEF, UNIFEM and WHO endorsed this Resolution and signed a joint declaration to support the acceleration of HIV prevention in the African Region.

Following this commitment, the year 2006 was declared the Year for Acceleration of HIV Prevention in the African Region, and countries were urged to intensify HIV prevention efforts towards universal access. To guide countries in implementing the acceleration of HIV prevention, a strategy for renewal and acceleration of HIV prevention in the African

¹ Botswana, Burkina Faso, Central African Republic, Congo, Côte d'Ivoire, Eritrea, Ethiopia, Gabon, Guinea, Guinea-Bissau, Malawi, Mali, Mozambique, Namibia, Rwanda, Sierra Leone, South Africa, Swaziland, Togo, United Republic of Tanzania, Zambia and Zimbabwe.

Box 4.1 WHO recommended interventions for the prevention of HIV in the health sector

1. Enabling people to know their HIV status

- 1.1 Client-initiated HIV testing and counselling
- 1.2 Provider-initiated HIV testing and counselling
- 1.3 Blood donor HIV testing and
- 1.4 Laboratory services for HIV diagnosis

2. Maximizing the health sector's contribution to HIV prevention

- 2.1 Preventing the sexual transmission of HIV
 - 2.1.1 Promoting and supporting condom use
 - 2.1.2 Detecting and managing sexually transmitted infections
 - 2.1.3 Safer sex and risk reduction counselling
 - 2.1.4 Male circumcision
 - 2.1.5 Prevention among people living with HIV
 - 2.1.6 Interventions targeting most-at-risk populations
 - 2.1.7 Specific considerations for HIV prevention in young people
 - 2.1.8 Specific considerations for HIV prevention among vulnerable populations
 - 2.1.9 Non-occupational post-exposure prophylaxis
- 2.2 Interventions for injecting drug users
 - 2.2.1 Needle and syringe programmes
 - 2.2.2 Opioid substitution therapy
 - 2.2.3 Information, education and communication
- 2.3 Prevention of HIV in infants and young children
 - 2.3.1 Family planning, counselling and contraception
 - 2.3.2 Antiretroviral medicines to prevent HIV infection in infants
 - 2.3.3 Treatment, care and support for women living with HIV, their children and families
 - 2.3.4 Infant-feeding counselling and support
- 2.4 Prevention of HIV transmission in health settings
 - 2.4.1 Safe injections
 - 2.4.2 Safe waste disposal management
 - 2.4.3 Occupational health of health-care workers
 - 2.4.4 Occupational post-exposure prophylaxis
 - 2.4.5 Blood safety

Region was developed in 2006 (8). The strategy included key interventions and targets related to youth-friendly services, services targeting sex workers, preventing and controlling sexually transmitted infections, preventing the mother-to-child transmission of HIV, blood safety, preventing and controlling infection and using condoms. The strategy also called for linking HIV prevention, treatment, care and support as an essential package.

In most African countries, especially in the Eastern and Southern Africa subregion, national strategic plans were revised with the aim of strengthening the HIV prevention component, and several countries have developed specific health sector HIV prevention strategies and plans to guide the health sector response. HIV prevention campaigns have been carried out with increased vigour in many countries, particularly in Eastern and Southern Africa. World AIDS Days focusing on promoting HIV testing and counselling; HIV testing and counselling weeks and campaigns were organized in some countries (Botswana, Cameroon, Ethiopia, Kenya, Lesotho, Malawi, Namibia, South Africa, Swaziland, Uganda and United Republic of Tanzania).

Acceleration of HIV prevention is becoming a reality in the African Region as countries are moving towards meeting ambitious targets. For example, the committee of health ministers of the Southern Africa Development Community endorsed the HIV prevention strategy of the Southern Africa Development Community aiming to reduce the number of people newly infected with HIV by 50% by 2015 and to virtually eliminate the transmission of HIV from mother to child (9).

4.2 HIV prevention among key populations at higher risk

In the African Region, data on the key populations at higher risk, including people who inject drugs, sex workers, men who have sex with men and prison inmates, are extremely limited. Only a handful of countries currently routinely report on the HIV situation and services delivered to these key populations. Most independent studies, however, have shown that key populations at higher risk contribute significantly to HIV infection, even in the countries that predominantly have a heterosexual HIV epidemic (10). High rates of acquiring HIV infection among key populations at higher risk have been reported in Indian Ocean islands such as Madagascar, Mauritius and Zanzibar, where the epidemic is mostly categorized as concentrated (11).

Access to most of these groups is limited because of various punitive laws such as the criminalization of sex between men and drug use in several countries in Africa (12). This also limits health-seeking behaviour and access to essential

HIV services. Similarly, surveillance and monitoring of HIV infections among key populations at higher risk is complex, and few countries in Africa have been able to conduct special population-based surveys such as respondent-driven sampling targeting key populations at higher risk. As a result, representative HIV data and estimates of the size of the key populations at higher risk, which are critical for programme planning, are relatively limited in most countries in the WHO African Region.

4.2.1 Sex workers

Sex workers are among the groups most affected by the HIV epidemic in most African countries. The prevalence of HIV among sex workers is still high, exceeding 30% in such countries as Burundi, Côte d'Ivoire, Guinea and Nigeria (Table 4.1). Recommended interventions among sex workers include (1) promoting condom use, (2) preventing and managing sexually transmitted infections and (3) promoting HIV testing and counselling. Although interventions targeting sex workers began in the early days of the HIV epidemic, they have had modest effects, as most of these interventions are implemented on a small scale (13). Only about one in three sex workers receives adequate HIV prevention services in sub-Saharan Africa (14). However, in some African countries, many projects have successfully reduced the burden of sexually transmitted infections among sex workers (15). Counselling for condom use and HIV testing also contributed to these successes. In Benin, high rates of condom use among sex workers and their clients have probably been a factor in slowing down the HIV epidemic (13).

In Madagascar (Box 4.2), it was demonstrated that adding clinic-based counselling to peer education reduces the prevalence of sexually transmitted infections (16). In the United Republic of Tanzania, HIV incidence in a cohort study declined from 13.9 per 100 woman-years to 5.0 per 100 woman-years over a period of 30 months. Concomitant declines were noted in the prevalence of sexually transmitted infections. These changes were attributed to women in the study receiving sexually transmitted infection screening and syndromic case management every three months, together with education on HIV and sexually transmitted infections, condom distribution and HIV testing and counselling (20).

Despite increases in the availability of testing services, many sex workers remain unaware of their status. Little information is available on specific service delivery models for HIV testing and counselling in sex work settings in sub-Saharan Africa. Models for providing HIV testing among this group therefore need to be developed further, especially those relating to the optimal role of peer counsellors and sites for providing testing. Peer outreach offers an opportunity to encourage testing and link sex workers with local testing services. Sex workers often receive HIV testing

Table 4.1. Coverage of HIV prevention programmes among sex workers (2009) and percentage of sex workers living with HIV in selected countries (2007–2009), WHO African Region

| Country | Sex workers reached with HIV prevention programmes in the past 12 months ^a | | | Sex workers who tested HIV positive | | |
|----------------------------------|---|--------------------------------------|---|---|---|--|
| | Number of respondents who replied yes to both questions | Total number of respondents surveyed | % of sex workers reached with HIV prevention programmes | Number of sex workers who tested positive for HIV | Total number of respondents surveyed and tested for HIV | % of sex workers who tested positive for HIV |
| | 2009 | | | 2007-2009 | | |
| Angola | 430 | 1 848 | 23 | | | |
| Benin | 592 | 1 050 | 56 | 250 | 1 013 | 25 |
| Burkina Faso | | | | 55 | 616 | 9 |
| Burundi | | | | 163 | 410 | 40 |
| Chad | 201 | 1 171 | 17 | 220 | 1 098 | 20 |
| Comoros | | | | 0 | 100 | 0 |
| Côte d'Ivoire | | | | 270 | 760 | 35 |
| Democratic Republic of the Congo | | | | 325 | 2 271 | 14 |
| Gabon | 208 | 601 | 35 | 100 | 431 | 23 |
| Ghana | 16 742 | 34 990 | 48 | | | |
| Guinea | 90 | 101 | 89 | 33 | 101 | 33 |
| Madagascar | | | | 12 | 2 288 | 0.5 |
| Mauritania | | | | 11 | 144 | 8 |
| Nigeria | | | | 700 | 2 140 | 33 |
| Swaziland | 143 | 143 | 100 | | | |
| Togo | | | | 212 | 723 | 29 |
| United Republic of Tanzania | 237 | 349 | 68 | | | |
| Regional median | | | 52 | | | |

a Data are mainly from surveys conducted among female sex workers. The respondents were asked the following questions: (1) Do you know where you can go if you wish to receive an HIV test? (2) In the past 12 months, have you been given condoms, such as through an outreach service, drop-in centre or sexual health clinic? The numerator of the indicator is the number of respondents who replied "yes" to both questions, and the denominator is the total number of respondents surveyed. Source: WHO, UNAIDS and UNICEF (13).

Box 4.2. Reducing unprotected sex

Madagascar

A randomized trial among sex workers in Madagascar demonstrated that adding clinic-based counselling to peer education reduces the prevalence of sexually transmitted infections (16). The counselling intervention lasted for about 15 minutes and covered risk assessment; information on sexually transmitted infections and HIV and dual protection; condom negotiation skills; and promotion of a "no condom, no sex" policy. After six months, more than half the sex workers in the intervention arm reported 100% condom use with clients in the past month. Increases in condom use with a non-paying partner were also noted, although the levels remained low. A reduction in sexually transmitted infections among sex workers compared with controls showed that the effects of male-condom programmes on sex workers can be further heightened by more intensive counselling on risk reduction. Several long-term studies among sex workers have found that declines in high-risk behaviour and HIV incidence occur over time, possibly due to the ongoing risk-reduction counselling provided as part of study activities (17,18). This adds to other evidence showing the effectiveness of condom promotion initiatives.

Kenya

A cohort study among sex workers in Nairobi, Kenya found that the per-act rate of HIV acquisition declined dramatically between 1985 and 2005. This reduction correlated closely with decreases in the prevalence of gonorrhoea and predated declines in HIV prevalence among the general population in Kenya by more than a decade. The study notes that this decline may represent the impact of improved prevention and treatment of sexually transmitted infections, among other factors (19).

during visits to other services, such as antenatal clinics. Almost half the sex workers in one study who knew their status had been tested during pregnancy (21).

Effective HIV interventions should target both sex workers and their clients. Studies in Africa have shown that male partners of female sex workers have a substantially higher

risk of acquiring HIV infection than the general population does (22). It is therefore crucial that access to and consistent proper use of condoms be enhanced by improving the coverage of targeted HIV prevention services.

Similar to the situation for other populations at higher risk, the lack of data and the presence of punitive laws have

posed challenges in efforts to effectively track the numbers of people acquiring HIV infection and the related behaviour and the programmes targeting sex workers. In 2009, only eight African countries reported on the percentage of sex workers reached with HIV programmes in the last 12 months preceding the surveys (Table 4.1). The percentage ranged from 17% in Chad to 100% in Swaziland, with a median of 52%. These data demonstrate the need for improved surveillance among sex workers and for scaling up HIV interventions as part of universal access to HIV prevention, treatment, care and support.

4.2.2 Men who have sex with men

Men who have sex with men are widespread in Africa, with high HIV prevalence and considerable high-risk HIV behaviour. Although data are limited, recent studies in Kenya and Uganda have reported HIV prevalence exceeding 43% and 13% respectively (23,24). Despite the importance of men who have sex with men in the epidemiology of HIV in Africa, their access to HIV services is limited. Stigma and the criminalization of sex between men in most African countries have been barriers to effective HIV programming targeting men who have sex with men (23).

In the Eastern and Southern Africa subregion, only three countries (Madagascar, Rwanda and South Africa) have no criminal laws prohibiting men from having sex with men (23). In 2009, only Togo reported on the proportion of men who have sex with men reached with an HIV prevention programme in the past 12 months (46%), indicating the need for strengthening HIV strategic information and access to HIV services among men who have sex with men.

Although the importance of HIV transmission among men who have sex with men in all geographical regions and epidemiological settings has been documented, national responses are still largely inadequate. This calls for urgently scaling up the coverage and quality of targeted interventions in countries and continued advocacy to include men who have sex with men as a sentinel population in existing systems for monitoring HIV programmes (13).

4.2.3 People who inject drugs

Fifteen of the 46 countries in the WHO African Region have identified injecting drug use as a high-risk HIV behaviour driving the epidemic (5). However, in 2009 only one country reported having syringe and needle exchange programmes, and two countries reported having opioid substitution programmes. Six African countries reported other drug dependence programmes. In Mauritius, the number of opioid substitution therapy sites per 1000 people who inject drugs was 1.6 in 2007-2009, and the number of syringe and needle programme sites per 1000 people who inject drugs was 3.9. On average, 44.4 syringes or needles were distributed per person who injects drugs per year.

A rise in injecting drug use in the Eastern and Southern Africa subregion has been documented, especially in Kenya, South Africa and the United Republic of Tanzania (25). People who inject drugs also have high prevalence of HIV infection and hepatitis C infection (26). The estimated percentage of people who inject drugs who are living with HIV ranges from as low as 2% in Madagascar to as high as 47% in Mauritius (5). In Mauritius and Zanzibar (Box 4.3), high-risk drug injection and sexual practices have been identified as major drivers for acquiring HIV infection among people who inject drugs. Significant proportions of people who inject drugs are also involved in sex work. Mode-of-transmission studies also indicated that significant proportions of the HIV infections people acquired in Kenya were attributed to people who inject drugs (10).

Although sufficient evidence exists of a link between a high prevalence of HIV infection and high-risk injecting and sexual behaviour, coverage of prevention interventions among people who inject drugs is still limited in Africa. This will likely threaten the gains accrued so far from successful HIV prevention in the Region. Including HIV prevention among

Box 4.3. HIV and coinfection with hepatitis C virus in Indian Ocean islands: the results of respondent-driven sampling surveys among people who inject drugs in Mauritius and Zanzibar

Most of the Indian Ocean islands off the coast of eastern and southern Africa have a concentrated HIV epidemic. People who inject drugs, sex workers, men who have sex with men and prison inmates are most severely affected by HIV. In 2009, Mauritius conducted its first round of a serological and behavioural HIV survey among people who inject drugs using respondent-driven sampling. The study recruited 511 (465 men and 46 women) with a median age of 31 years. Of the people who inject drugs, 47% were living with HIV. The HIV prevalence among women who inject drugs was 71%. Among all people who inject drugs, the prevalence of hepatitis C virus infection was 97% and syphilis 3%. The study also found high-risk drug injection and sexual practices (27).

In Zanzibar, 499 people who inject drugs (483 men and 16 women) were recruited in a respondent-driven sampling survey in 2007. Of the people who inject drugs, 16% were living with HIV. Unlike in Mauritius, the hepatitis C virus seroprevalence exceeded 25%. High-risk injection and sexual practices were also found (11). These studies illustrate an overlap of high-risk injection practices and sexual behaviour among people who inject drugs and underscore the importance of a comprehensive HIV prevention package to effectively address the HIV epidemic among these subpopulations. Studies in Asia have shown a high correlation between HIV infection among sex workers and injecting drug use (28), indicating that HIV is most likely to spread to the general population through the clients of sex workers. As Mauritius and Zanzibar are famous tourist destinations with constant movement of people, HIV may spread beyond these islands.

people who inject drugs, especially harm reduction strategies, is therefore important as one of the regional HIV priority interventions. As individuals who inject drugs continue to be underserved in the Region, integrating HIV prevention, treatment, care and support into harm reduction programmes is essential to enhance access to comprehensive HIV services among people who inject drugs.

4.2.4 Prevention among young people

WHO recommendations for HIV prevention among young people (15–24 years old) provided by the health sector include contributing to acquiring adequate knowledge of HIV, promoting condom use for sexually active people, preventing and controlling sexually transmitted infections, male circumcision and HIV testing and counselling. This section focuses on the status of knowledge of HIV and condom use, since later sections cover sexually transmitted infections and male circumcision, and Chapter 3 already covered HIV testing and counselling.

In 2010, UNAIDS reported a decline in HIV prevalence among young people of more than 25% in 22 key countries in sub-Saharan Africa between 2001 and 2008 (13). In many countries, the numbers of people newly infected with HIV are steadily falling or stabilizing (29). In nine countries in the Southern Africa subregion, at least 5% of young people are living with HIV, and in Botswana, Lesotho and Swaziland, more than 10% of young people are living with HIV (UNICEF analysis based on estimates of the number of young people aged 15–24 years living with HIV in 2008 and age-specific population estimates).

In 2009, UNAIDS Cosponsors stressed the need for simultaneous action to improve young people's comprehensive knowledge of HIV and their access to and use of condoms, HIV testing and counselling and risk reduction. Comprehensive knowledge of HIV among young people remains relatively low in most countries in the Region. Based on population-based surveys conducted between 2005 and 2009, only three countries have attained a level of knowledge of 50% or more among both young men and young women: Namibia, Rwanda and Swaziland. Two of these, Namibia and Swaziland, have very high HIV prevalence among adults, and given this higher risk of exposure, increasing knowledge among young people, complemented by sustained behaviour change, service delivery programmes and enabling policies, will continue to be central to HIV prevention efforts. This combination has already contributed to a 25% decline in HIV prevalence among young people in Namibia (30).

Condom programming for adolescents is not sufficiently developed within country programmes, and the use of condoms by adolescent girls in particular remains very low. Based on data available from 2005–2009, only 47%

of the men and 32% of the women aged 15–24 years in sub-Saharan Africa who reported that they had had sex with multiple partners during the previous 12 months claimed to have used condoms at their last intercourse (31).

Although this is low, this does represent some progress in condom use and safer sex among young people. Since 2000, condom use has increased by 10 percentage points or more among young women in 11 of 22 countries based on trend data and among young men in 11 of 17 countries based on trend data (32). However, most countries do not report on condom use among young people.

4.3 Male circumcision

Medical male circumcision is now a major additional health sector HIV prevention strategy that the WHO Regional Committee for Africa endorsed in 2009 through resolution AFR/RC59/R7 (33). The efficacy of male circumcision in reducing the risk of men acquiring HIV through female-to-male transmission has been confirmed through clinical trials, observational studies and ecological experience (34,35). The findings of three randomized controlled trials carried out in Kenya, South Africa and Uganda showed an approximately 60% reduction in the risk of acquiring HIV infection among heterosexual men (35–37) and provided WHO with the evidence to recommend establishing male circumcision programming, especially in African settings. Further studies and secondary analysis have also demonstrated that male circumcision reduces incidence of trichomoniasis, bacterial vaginosis and genital ulcers related to herpes simplex virus 2 among women, thus reducing a woman's risk of acquiring HIV (38).

In 2007, following the randomized controlled trials, WHO and UNAIDS convened an international panel of experts to provide guidance on how male circumcision should be introduced and expanded in countries with high HIV prevalence rates, generalized heterosexual HIV epidemics and low rates of male circumcision. Thirteen countries in the Eastern and Southern Africa subregion whose HIV transmission rates and male circumcision status meet these criteria have since been encouraged and supported in efforts directed at urgently scaling up male circumcision services: Botswana, Kenya, Lesotho, Malawi, Mozambique, Namibia, Rwanda, South Africa, Swaziland, Uganda, United Republic of Tanzania, Zambia and Zimbabwe.

4.3.1 Male circumcision policies, strategies and scale-up plans

Some countries have developed stand-alone male circumcision policies; in others, the male circumcision policy has been incorporated into existing HIV policies. Male circumcision strategies and operational plans have

been also developed in most of these countries. Various types of personnel and service providers have been trained in all 13 priority countries (Botswana, Kenya, Lesotho, Malawi, Mozambique, Namibia, Rwanda, South Africa, Swaziland, Uganda, United Republic of Tanzania, Zambia and Zimbabwe). These have depended on the capacity to train and the availability of personnel to be trained. To some extent, the rate at which male circumcision is scaled up has also determined the amount of investment that has gone into training. Countries such as Botswana, Kenya, Zambia and Zimbabwe that have rapidly increased the numbers of male circumcisions carried out have had to train many more personnel to carry these out. In general, progress has especially been made in countries that have had overwhelming political support for the effort. These countries have included Botswana, Kenya and (recently) KwaZulu-Natal Province in South Africa.

4.3.2 Delivering male circumcision services

Most male circumcision services are provided from fixed sites by various institutions such as the public sector or

government, military, the private for-profit sector and traditional practitioners. Countries such as Botswana, Kenya, Zambia and Zimbabwe have to some extent been implementing the model for optimizing the volume and efficiency of male circumcision services (MOVE model) (39), which has played a major part in increasing the number of male circumcisions carried out. Similarly, male circumcision campaigns have been used to improve access to male circumcision services by the population, thereby boosting the number of circumcisions carried out. Kenya, Swaziland, Zimbabwe and KwaZulu-Natal Province in South Africa have already completed rounds of male circumcision campaigns, and other countries such as Namibia are exploring other approaches, including volunteer circumcisers from outside their borders to help deal with backlog of circumcisions needed as a way of improving access to male circumcision services.

Table 4.2 summarizes progress in male circumcision scale-up in the 13 priority countries. The numbers of male circumcisions presented are probably underestimated, since the report may not reflect data from other institutions

Table 4.2. Status of male circumcision activities in the WHO African Region

| Country | Situation analysis | Policy and regulation framework | Strategy and operational plan | Training | Service delivery | Service delivery statistics |
|-----------------------------|------------------------------------|---|--|--|---|---|
| Botswana | Conducted 2007 | Male circumcision incorporated in existing HIV policy | To reach 80% of males aged 0-49 years by 2016 | Training curriculum developed; 90 health workers trained by April 2010 | Scaling up started in April 2009; six facilities selected to be male circumcision centres of excellence | January 2009 - March 2010: 6180 male circumcisions |
| Kenya | Completed | Policy in place | 80% coverage of newborns and men aged 15-49 years | 800 personnel trained | Male circumcision scaled up in Nyanza Province | September 2008 - April 2010: 110 000 male circumcisions |
| Lesotho | Completed | Approved | Approved | Training plans not yet developed | Formal scale-up not started yet | No information |
| Malawi | Completed | Not yet | Aspects of strategy incorporated in standard operating procedures for male circumcision | Not yet | Formal scale-up of male circumcision not yet started | December 2009 - May 2010: 1200 male circumcisions |
| Mozambique | Health facility readiness assessed | No formal policy on male circumcision | | Senior Ministry of Health staff trained | Five pilot sites selected for scaling up male circumcision | November 2009 - May 2010: 853 male circumcisions |
| Namibia | Completed | Draft developed | Completed and rolled out in selected facilities | Curriculum developed and training carried out in 2009 and 2010 | Formal scale-up not underway but delivery underway at selected sites | August 2009 - May 2010: 340 male circumcisions |
| Rwanda | Facility assessment completed | Male circumcision integrated into HIV prevention policy | Draft national strategy on male circumcision | Personnel at several levels have been trained | Four civilian sites services and also military facilities offer male circumcision | October 2009 - May 2010: 542 male circumcisions |
| South Africa | In progress | Completed | Strategy and implementation guidelines completed | Two training centres established in KwaZulu-Natal | KwaZulu-Natal has rolled out male circumcision scale-up in 11 districts | By April 2010: 18 100 male circumcisions carried out |
| Swaziland | Some aspects carried out | Finalized | Finalized | 20 doctors and 59 nurses trained | Six sites providing male circumcision services | 2006 - March 2010 9309 male circumcisions carried out |
| Uganda | Completed | Approved | Under development | A few workers from selected facilities trained at the Rakai Research Project | Not yet started | No information |
| United Republic of Tanzania | Completed | Under discussion | Strategy awaiting approval; male circumcision included in five-year HIV and AIDS multisectoral strategic framework | 94 providers trained | Four sites actively providing male circumcision services | October 2009 - March 2010: 3148 male circumcisions |
| Zambia | Completed | Male circumcision incorporated into HIV prevention | Completed | 350 providers trained | Most sites adopting the male circumcision MOVE model | Until January 2010: 20 779 male circumcisions |
| Zimbabwe | Completed | Finalized October 2009 | Completed | 104 nurses and doctors have been trained | Pilot phase completed; roll-out being planned; still the same five pilot sites offering services | August 2010: 15 000 male circumcisions |

such as the private sector and nongovernmental organizations. Similarly, the recently completed WHO/UNAIDS male circumcision monitoring and evaluation profile assessment in these countries identified significant gaps and limited capacity in the monitoring and evaluation

of male circumcision services. Similar to other HIV programmes, lack of leadership and political will, shortages of appropriate personnel and inadequate funding continue to hinder the rapid scale-up of male circumcision in the African Region.

Table 4.3. Services for sexually transmitted infections targeting sex workers and the prevalence of syphilis among antenatal care attendees in selected countries, WHO African Region, 2009

| Country | Number of targeted service delivery points for sex workers at which sexually transmitted infection services are provided (per 1000 sex workers) | Prevalence of syphilis among antenatal care clinic attendees (%) |
|----------------------------------|---|--|
| Benin | 2.8 | 0.3 |
| Burkina Faso | 0.8 | 2.1 |
| Burundi | | 1.4 |
| Botswana | | 1.3 |
| Cameroon | | 0.6 |
| Central African Republic | | 5.9 |
| Chad | | 7.3 |
| Comoros | 4.0 | |
| Côte d'Ivoire | 3.3 | 0.2 |
| Democratic Republic of the Congo | | 2.0 |
| Gabon | | 0.9 |
| Ghana | | 6.1 |
| Guinea | 0.5 | 1.5 |
| Madagascar | | 7.7 |
| Malawi | | 1.1 |
| Mauritius | | 0.1 |
| Mozambique | | 6.9 |
| Namibia | | 2.3 |
| Niger | 1.5 | 2.6 |
| Nigeria | | 1.5 |
| Rwanda | | 1.6 |
| Sao Tome and Principe | 14.4 | 0.4 |
| Sierra Leone | | 0.4 |
| South Africa | | 3.9 |
| Swaziland | | 4.7 |
| Togo | 2.0 | 1.1 |
| United Republic of Tanzania | | 4.4 |
| Zambia | | 5.1 |
| Zimbabwe | | 0.6 |

Source: database of the WHO Regional Office for Africa.

4.4 Preventing sexually transmitted infections

The link between HIV and other sexually transmitted infections has been well studied. Adequate evidence indicates that sexually transmitted infections increase the susceptibility to HIV infection among HIV-negative individuals (40). Diagnosing and promptly treating sexually transmitted infections are therefore essential elements for any programme for controlling HIV.

Africa is highly affected by sexually transmitted infections. The burden of *Chlamydia trachomatis*, *Neisseria gonorrhoeae* and *Treponema pallidum* (syphilis) infection is high in most countries, although various interventions for individuals with sexually transmitted infections and their sexual partners have contributed to reducing the prevalence of sexually transmitted infections and gradually reducing the HIV prevalence in some countries (41).

Two indicators related to sexually transmitted infections have been collected from the countries as part of reporting on progress towards achieving universal access to HIV prevention, treatment, care and support. First is the number of service delivery points providing sexually transmitted infection services for sex workers per 1000 sex workers. Second is the prevalence of syphilis infection among antenatal care attendees. In 2009, nine countries reported on the first indicator and 28 countries reported on the second (Table 4.3). The reporting countries varied widely, as the number of service delivery points for sex workers ranged from 0.5 per 1000 sex workers in Guinea to 14.4 per 1000 sex workers in Sao Tome and Principe. The prevalence of syphilis among antenatal care attendees also varied, with such countries as Chad, Ghana, Madagascar, Mozambique and Zambia reporting that the prevalence exceeded 5%.

4.5 Blood safety

WHO recommendations for blood safety includes developing and implementing national blood policies and plans, aiming at promoting the collection of blood from voluntary and regular donors from populations at lower risk of HIV infection; testing blood for all transfusion-transmissible infections, including HIV; and producing and implementing guidelines for the appropriate clinical use of blood and improving access to safe blood by everyone in need.

To date, 43 of the 46 countries in the WHO African Region have developed national blood policies; 20 countries are collecting at least 80% of blood from voluntary donors as recommended in the African regional strategy for blood safety, and the number of units of blood collected in the Region has increased from about 1.95 million in 2000 to more than 3.5 million in 2009. Blood transfusion services routinely conduct pre- and post-donation counselling. In the last survey conducted in 2009, 40 countries declared testing 100% of blood for HIV before transfusion, and the remaining 6 countries test at least 98%.

The main challenges today include insufficient collection of blood for transfusion, with the actual collection covering less than 50% of the needs, estimated at 8 million units of blood per year; limited access to safe blood in rural areas, since most of the blood banks are concentrated in the major cities; and poor-quality management systems. The lack of well-organized procurement systems and shortages of funds continue to jeopardize the regular provision of test kits for screening blood.

Member States should: accelerate the implementation of policy; mobilize recruits and retain more voluntary donors; put in place reliable procurement and quality management systems; ensure the equitable distribution of blood transfusion services in countries; and put in place well-organized and effective transport and distribution systems. Regularly monitoring and evaluating the national blood programme will enable strategies to be readjusted to better respond to the population needs and address the remaining safety issues.

4.6 Challenges and the way forward

HIV programming is focusing greater attention on preventing HIV transmission in the health sector, and HIV prevention efforts are beginning to bear fruit, since 2006 was declared as the Year for Launching the Acceleration of HIV Prevention in the African Region. One main challenge ahead is to sustain current momentum in an environment of financial constraints.

HIV prevention is accelerating but at a scale and pace that does not match the severity of the epidemics in the Region. Uptake of services to prevent and control sexually transmitted infections, interventions targeting young people and preventing HIV transmission in health care settings are still challenges in the Region. Coverage of HIV prevention interventions for the key populations at higher risk remains very low. Key populations at higher risk include sex workers

and their clients, couples with HIV serodiscordant status, people who inject drugs, men who have sex with men and prisoners. Countries are making efforts to address this gap, but legal arrangements continue to be important impeding factors in many countries.

The challenge in enhancing the contribution of the health sector to HIV prevention is to identify the factors that are impeding accelerated scale-up and to address them. Some are related to health system weaknesses, including human resource constraints, infrastructure capacity, inadequate funding or resource allocation and weak surveillance systems, including limited tools for measuring incidence and impact. Other challenges are related to inadequate programming, leading to inadequate resource allocation and priority-setting. The “know your epidemic” exercise carried out in numerous countries has shown that resources are not always allocated where they should be to significantly reduce the incidence of HIV infection.

Programme implementers have not yet fully involved the people living with HIV in designing, planning and implementing HIV prevention programmes in Africa. Positive prevention deserves more attention.

Current momentum for HIV prevention needs to be sustained, and more needs to be done to mobilize the necessary resources for HIV prevention programmes without reducing ongoing efforts to scale up HIV treatment and care. HIV prevention should be integrated with treatment and care. Strategic information needs to be strengthened to fill the information gap related to key populations at higher risk, measuring incidence and impact and transmission dynamics. Countries need to be supported in continually reviewing the modes of HIV transmission and tailoring their HIV prevention responses. WHO will develop an evidence-informed and cost-effective HIV prevention package for the health sector and support its implementation at the national level, including mobilizing resources.

Core interventions include: promoting HIV testing and counselling; carrying out safe medical male circumcision; preventing mother-to-child transmission; preventing and controlling other sexually transmitted infections; promoting condom use; ensuring counselling for reducing risk specifically focused on young people; and implementing antiretroviral therapy. HIV prevention interventions targeting the key populations at higher risk need to be scaled up while legal and other bottlenecks are addressed. The progress and lessons learned need to be continually documented and disseminated, and operational research is needed to inform decision-making.

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5. HIV PREVENTION AND TREATMENT FOR WOMEN AND CHILDREN

Key findings

- By the end of 2009, comprehensive accelerated plans for scaling up services for preventing mother-to-child transmission were being rolled out in 35 countries of the African Region, with a shift from donor-supported pilot projects to the implementation of comprehensive national plans.
- The percentage of pregnant women living with HIV who received antiretroviral medicine for preventing mother-to-child transmission in sub-Saharan Africa increased from 15% in 2005 to 45% in 2008 and 54% in 2009.
- Of 34 countries with disaggregated data, 25 reported using the most efficacious regimen as the treatment of choice for preventing mother-to-child transmission of HIV in accordance with the WHO guidelines on preventing mother-to-child transmission.
- In 2009, 431 295 infants born to mothers living with HIV in 45 reporting countries received antiretroviral prophylaxis. This coverage of 20% is a slight increase from 17% in 2008.
- The number of children receiving antiretroviral therapy rose from 224 900 in 2008 to 296 000 in 2009, a 32% increase in one year. This represents an estimated coverage of 26% of the children who need antiretroviral therapy based on the 2010 WHO guidelines for antiretroviral therapy for infants and children.

Preventing HIV transmission from mother to child during pregnancy, childbirth and breastfeeding is key to realizing the Millennium Development Goals, including Goals 4, 5 and 6 on reducing child mortality, improving maternal health and combating HIV/AIDS, malaria and other diseases. The 2008 estimates of the maternal mortality ratio showed that, without HIV, 580 mothers would have died per 100 000 live births instead of 640 in sub-Saharan Africa (1). The contribution of HIV to maternal deaths was estimated to be 9% in sub-Saharan Africa. The countries in the African Region with the highest HIV prevalence in the world experienced an increase in maternal mortality ratio from 1990 to 2008. Botswana increased by 133%, Zimbabwe 102%, South Africa 80%, Swaziland 62% and Lesotho 44%. Thus, none of these countries made any progress towards achieving Millennium Development Goal 4 of reducing child mortality (2). *World health statistics 2010* (3) estimated that 4% of the mortality among children younger than five years in the African Region was related to HIV. In such countries as South Africa and Swaziland, HIV remained the most important cause of deaths among children younger than five years, accounting for 46% and 49% respectively (3).

In 2009, 12.0 million of the estimated 15.9 million women aged 15 years and older living with HIV worldwide lived in sub-Saharan Africa (4). About 91% of these women lived in 25 countries, of which 23 are in the African Region, resulting in an increasing number of children infected with HIV through mother-to-child transmission. More than 85% of the children living with HIV are in the African Region, even though effective interventions for preventing mother-to-child transmission can reduce the risk of transmission from 20–45% to 5% in the breastfeeding population and to less than 2% in the non-breastfeeding population (5).

National ownership and commitment to increase the uptake of services for preventing mother-to-child transmission has led to the development of plans for scaling up and great efforts in integrating interventions for preventing mother-to-child transmission within maternal, newborn and child health care services. By the end of 2009, comprehensive accelerated plans for scaling up services for preventing mother-to-child transmission were being implemented in 35 countries,¹ with a shift from donor-supported pilot projects to the implementation of comprehensive national plans.

In July 2010, WHO released updated guidelines on antiretroviral medicine for treating pregnant women living

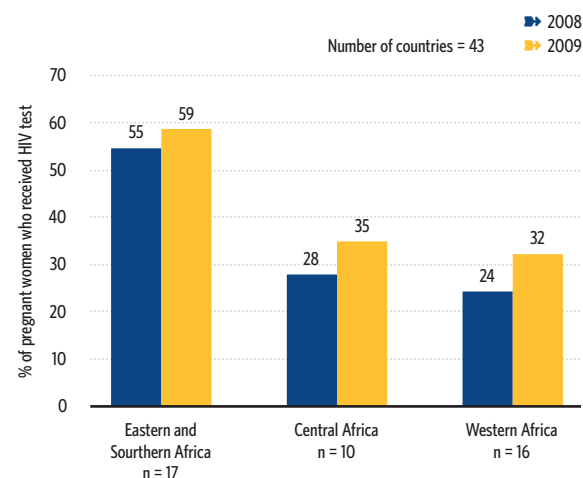
with HIV and preventing HIV infection among infants (6), infant feeding for mothers living with HIV (7) and antiretroviral therapy for HIV infection among infants and children (8). These guidelines called for, among other things, earlier initiation and longer duration of antiretroviral therapy for both mothers and their children to further contribute to halting the transmission of HIV from mothers to their infants.

This chapter reviews progress made by countries in the WHO African Region between 2005 and 2009 in preventing HIV transmission from women living with HIV to their infants and providing appropriate treatment, care and support to mothers living with HIV, their children and families. Although primary prevention of HIV infection among women of childbearing age and preventing unwanted pregnancies among women living with HIV are important, these approaches for preventing mother-to-child transmission are beyond the scope of this report.

5.1 HIV testing and counselling among pregnant women

The percentage of pregnant women who received an HIV test increased from 9% in 2005 to 29% in 2008 and to 35% in 2009 in sub-Saharan Africa (9). In the African Region, among 43 countries with comparable data, the percentage of pregnant women who received an HIV test increased from 37% in 2008 to 43% in 2009 (Table 5.1).

Fig. 5.1. Percentage of pregnant women receiving an HIV test by subregion, WHO African Region, 2008–2009



Source: Database of the WHO Regional Office for Africa.

¹ Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central Africa Republic, Chad, Congo, Côte d'Ivoire, Democratic Republic of the Congo, Eritrea, Ethiopia, Ghana, Guinea-Bissau, Kenya, Lesotho, Liberia, Malawi, Mali, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, South Africa, Swaziland, Togo, Uganda, United Republic of Tanzania, Zambia and Zimbabwe.

Table 5.1. Reported number of pregnant women tested and counselled for HIV infection and estimated coverage of HIV testing and counselling among pregnant women, WHO African Region, 2007–2009

| Countries | Reported number of pregnant women tested for HIV | | | Estimated coverage of HIV testing and counselling among pregnant women (%) | | |
|----------------------------------|--|-----------|-----------|--|------|------|
| | 2009 | 2008 | 2007 | 2009 | 2008 | 2007 |
| Angola | 203 463 | 162 598 | 57 605 | 26 | 21 | 7 |
| Burundi | 113 053 | 28 179 | 17 422 | 40 | 10 | 5 |
| Cameroon | 291 473 | 276 177 | 200 000 | 41 | 39 | 31 |
| Central African Republic | 43 775 | 22 073 | 25 517 | 28 | 14 | 16 |
| Chad | 32 119 | 10 967 | — | 6 | 2 | — |
| Congo | 28 699 | 23 530 | 5 549 | 23 | 19 | 4 |
| Democratic Republic of the Congo | 253 297 | 236 919 | 130 009 | 9 | 8 | 4 |
| Equatorial Guinea | 16 228 | 6 470 | 6 300 | 63 | 26 | 33 |
| Gabon | 9 321 | 16 340 | 10 918 | 23 | 41 | 32 |
| Sao Tome and Principe | 6 475 | 6 281 | 5 492 | >95 | >95 | >95 |
| Central Africa | 997 903 | 789 534 | 458 812 | 26 | 19 | 12 |
| Botswana | 44 386 | 41 311 | 35 970 | 93 | 87 | 77 |
| Comoros | 1 034 | 1 199 | 181 | 5 | 6 | 1 |
| Eritrea | 46 544 | 46 544 | 34 884 | 25 | 26 | 19 |
| Ethiopia | 488 554 | 292 238 | 157 919 | 16 | 9 | 5 |
| Kenya | 961 990 | 973 244 | 428 624 | 63 | 65 | 30 |
| Lesotho | 29 626 | 29 430 | 23 965 | 50 | 50 | 41 |
| Madagascar | 140 261 | 201 833 | 66 983 | 20 | 29 | 9 |
| Malawi | 316 000 | 405 694 | 280 446 | 52 | 68 | 50 |
| Mozambique | 672 020 | 523 009 | — | 77 | 60 | — |
| Namibia | 51 970 | 52 625 | 366 281 | 88 | 90 | 43 |
| Rwanda | 294 457 | 294 704 | 42 322 | 71 | 73 | 80 |
| South Africa | 1 099 712 | 848 496 | 212 501 | >95 | 78 | 51 |
| Swaziland | 25 769 | 27 313 | — | 73 | 78 | — |
| Uganda | 968 157 | 830 023 | 33 838 | 64 | 57 | >95 |
| United Republic of Tanzania | 1 194 172 | 919 377 | 707 948 | 66 | 52 | 64 |
| Zambia | 532 484 | 364 331 | 476 994 | >95 | 67 | 34 |
| Zimbabwe | 175 223 | 130 240 | 519 287 | 46 | 34 | 33 |
| Eastern and Southern Africa | 7 042 359 | 5 981 611 | 3 825 023 | 63 | 60 | 38 |
| Benin | 171 532 | 127 763 | 83 776 | 49 | 37 | 23 |
| Burkina Faso | 310 583 | 161 455 | 61 628 | 42 | 22 | 10 |
| Cape Verde | 8 500 | 7 345 | 6 097 | 71 | 61 | 41 |
| Côte d'Ivoire | 342 698 | 230 159 | 48 574 | 47 | 32 | 7 |
| Gambia | 31 071 | 26 434 | 15 686 | 50 | 43 | 26 |
| Ghana | 388 254 | 257 466 | 109 334 | 51 | 34 | 16 |
| Guinea | 39 893 | 38 586 | 29 919 | 10 | 10 | 8 |
| Guinea-Bissau | 13 864 | 8 235 | 6 886 | 21 | 13 | 8 |
| Liberia | 32 659 | 24 423 | 9 318 | 22 | 17 | 5 |
| Mali | 86 814 | 67 090 | 48 019 | 16 | 12 | 8 |
| Mauritania | 6 371 | 6 371 | 6 840 | 6 | 6 | 7 |
| Niger | 158 695 | 117 490 | 66 775 | 19 | 15 | 10 |
| Nigeria | 820 865 | 605 875 | 207 107 | 13 | 10 | 4 |
| Senegal | 166 830 | 111 210 | 22 770 | 35 | 24 | 5 |
| Sierra Leone | 99 256 | 91 212 | 52 258 | 44 | 41 | 20 |
| Togo | 42 101 | 30 709 | 20 553 | 20 | 14 | 8 |
| Western Africa | 2 719 986 | 1 911 823 | 795 540 | 29 | 20 | 8 |
| African Region | 10 760 248 | 8 682 968 | 5 079 375 | 41 | 31 | 18 |

Source: Database of the WHO Regional Office for Africa.

5.2 Providing antiretroviral medicine to pregnant women for preventing the mother-to-child transmission of HIV

By the end of 2009, 35 countries of the WHO African Region were rolling out comprehensive accelerated plans for scaling up services for preventing the mother-to-child transmission of HIV, with a shift from donor-supported pilot projects to implementing comprehensive national plans. The percentage of pregnant women who received an HIV test increased from 9% in 2005 to 29% in 2008 and to 35% in 2009 in sub-Saharan Africa.

The considerable variation among the subregions and countries masks the progress made in some countries in the Eastern and Southern Africa subregion. The proportion of pregnant women who received an HIV test reached 59% in

Eastern and Southern Africa in 2009 versus 32% in Western Africa (Fig 5.1). In 2009, six countries, most in the Eastern and Southern Africa subregion, reported coverage of HIV testing and counselling among pregnant women exceeding 80%: Botswana (93%), Mauritius (88%), Namibia (88%), Sao Tome and Principe (>95%), South Africa (>95%) and Zambia (>95%). Encouragingly, however, Western Africa showed the largest year-on-year increase among the three subregions in the proportion of women tested among the three subregions.

In addition, the percentage of pregnant women living with HIV who received antiretroviral medicine for preventing mother-to-child transmission in sub-Saharan Africa increased from 15% in 2005 to 45% in 2008 to 54% in 2009 (9).

From 2007 to 2009, most countries in the African Region reported on the number of pregnant women living with HIV

Table 5.2. Estimated percentage of pregnant women living with HIV who received antiretroviral medicine for preventing mother-to-child transmission in selected countries with comparable data, WHO African Region, 2007–2009

| Countries | Subregion | Reported number of pregnant women living with HIV who received antiretroviral medicine for preventing mother-to-child transmission | | | Estimated coverage of pregnant women living with HIV who received antiretroviral medicine for preventing mother-to-child transmission (%) | | |
|--------------------------|-----------------------------|--|---------|---------|---|------|------|
| | | 2007 | 2008 | 2009 | 2007 | 2008 | 2009 |
| Angola | Central Africa | 1 645 | 2 962 | 3 053 | 9 | 19 | 19 |
| Burundi | Central Africa | 1 102 | 1 488 | 1 837 | 14 | 9 | 12 |
| Cameroon | Central Africa | 7 516 | 10 144 | 9 092 | 22 | 28 | 27 |
| Central African Republic | Central Africa | 3 714 | 1 936 | 2 157 | 34 | 23 | 34 |
| Chad | Central Africa | 254 | 722 | 989 | 1 | 5 | 6 |
| Congo | Central Africa | 240 | 438 | 441 | 5 | 10 | 12 |
| Equatorial Guinea | Central Africa | 103 | 567 | 365 | 14 | 40 | 26 |
| Gabon | Central Africa | 494 | 634 | 577 | 21 | 35 | 30 |
| Benin | Western Africa | 1 830 | 1 447 | 1 703 | 40 | 40 | 46 |
| Burkina Faso | Western Africa | 1 480 | 1 333 | 2 084 | 18 | 20 | 32 |
| Côte d'Ivoire | Western Africa | 3 240 | 9 296 | 11 064 | 12 | 41 | 54 |
| Ghana | Western Africa | 2 896 | 4 991 | 3 643 | 21 | 39 | 27 |
| Guinea | Western Africa | 679 | 1 205 | 783 | 11 | 22 | 17 |
| Guinea-Bissau | Western Africa | 349 | 305 | 383 | 24 | 20 | 24 |
| Liberia | Western Africa | 224 | 381 | 377 | 7 | 14 | 16 |
| Nigeria | Western Africa | 12 278 | 19 804 | 44 723 | 7 | 10 | 22 |
| Sierra Leone | Western Africa | 919 | 1 018 | 637 | 21 | 31 | 19 |
| Togo | Western Africa | 705 | 1 127 | 1 451 | 9 | 18 | 26 |
| Botswana | Eastern and Southern Africa | 12 419 | 11 971 | 12 406 | >95 | >95 | >95 |
| Eritrea | Eastern and Southern Africa | 168 | 424 | 464 | 7 | 29 | 34 |
| Kenya | Eastern and Southern Africa | 52 858 | 59 601 | 58 591 | 69 | 56 | 73 |
| Lesotho | Eastern and Southern Africa | 3 966 | 8 056 | 8 846 | 32 | 57 | 64 |
| Mozambique | Eastern and Southern Africa | 44 975 | 46 848 | 68 248 | 46 | 42 | 70 |
| Namibia | Eastern and Southern Africa | 6 022 | 7 474 | 6 744 | 64 | 91 | 88 |
| Rwanda | Eastern and Southern Africa | 6 485 | 7 197 | 7 030 | 60 | 72 | 65 |
| South Africa | Eastern and Southern Africa | 127 164 | 149 118 | 188 200 | 57 | 73 | 88 |
| Swaziland | Eastern and Southern Africa | 8 772 | 10 811 | 8 182 | 67 | >95 | 88 |
| Uganda | Eastern and Southern Africa | 26 484 | 41 598 | 46 948 | 34 | 50 | 53 |
| Zambia | Eastern and Southern Africa | 35 314 | 41 286 | 47 175 | 47 | 59 | 69 |
| Zimbabwe | Eastern and Southern Africa | 15 381 | 18 756 | 28 208 | 29 | 36 | 56 |

Source: Database of the WHO Regional Office for Africa.

who received antiretroviral medicine for preventing mother-to-child transmission. Among 30 countries with comparable data, the proportion of pregnant women living with HIV who received antiretroviral medicines to reduce the risk of mother-to-child transmission of HIV increased from 30% in 2007 to 39% in 2008 and 43% in 2009 (Table 5.2). Thus, the coverage was lower than the average coverage rates of antiretroviral prophylaxis for preventing mother-to-child transmission in low- and middle-income countries globally, estimated at 53% in 2009.

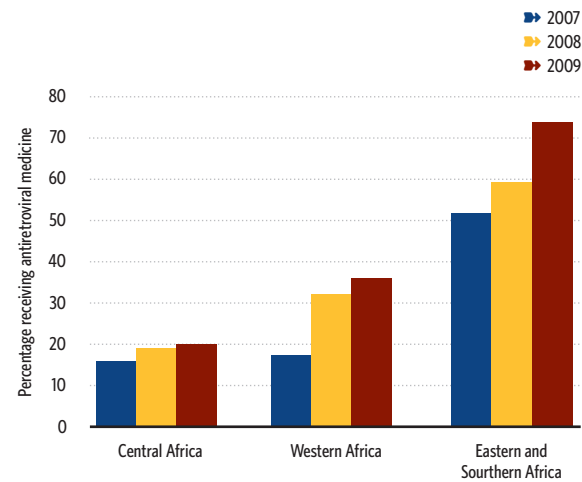
Little progress has made been made in countries in the African Region compared with the average coverage rate of HIV testing and antiretroviral prophylaxis for preventing mother-to-child transmission in low- and middle-income countries globally, estimated at 26% in 2009 and 53% in 2009.

The trends in the percentage of pregnant women living with HIV receiving antiretroviral medicine also vary by subregion among these 30 countries, with the Eastern and Southern Africa subregion showing remarkable progress (Fig. 5.2).

The proportion of pregnant women living with HIV who received antiretroviral medicine for preventing mother-to-child transmission differs considerably in the 23 countries in the African Region bearing the highest burden (Fig. 5.3).

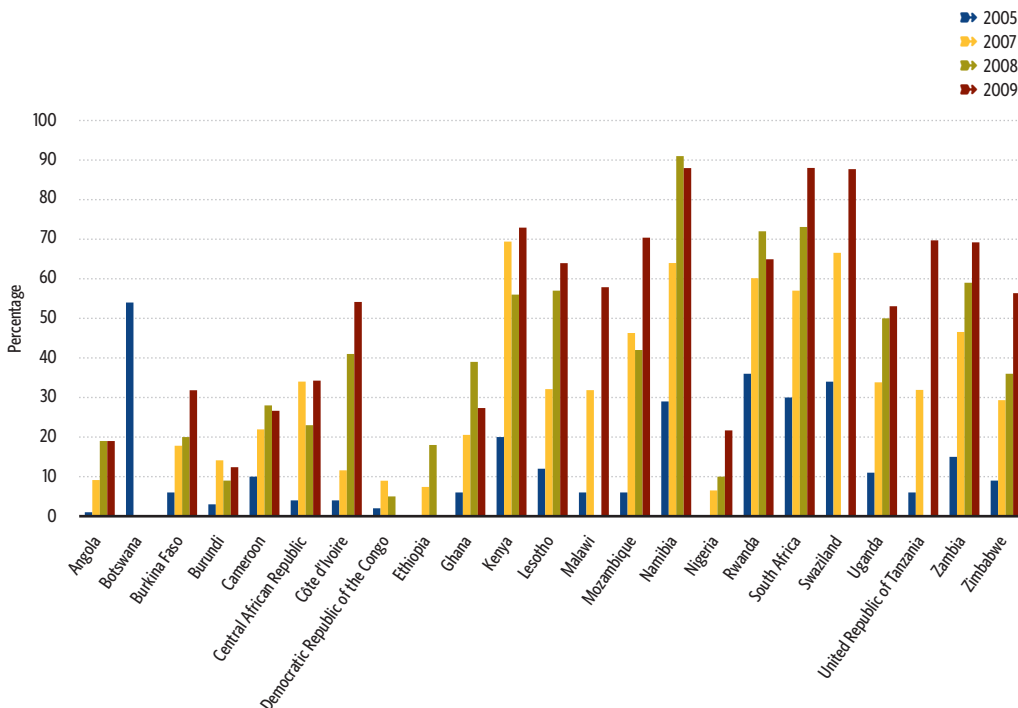
Coverage rates were below 20% in Ethiopia and Nigeria, but such countries as Botswana, Namibia, South Africa and Swaziland had reached the universal access target of more than 80% by the end of 2009.

Fig. 5.2. Percentage of pregnant women living with HIV receiving antiretroviral medicine for preventing the mother-to-child transmission of HIV by subregion, WHO African Region, 2007–2009



Source: Database of the WHO Regional Office for Africa.

Fig. 5.3. Percentage of pregnant women living with HIV receiving antiretroviral medicine for preventing the mother-to-child transmission of HIV in the 23 countries bearing the highest burden, WHO African Region, 2005–2009



Source: Database of the WHO Regional Office for Africa.

The lessons learned indicated that strong political will and leadership, the existence of national plans with clear objectives, targets and plans, implementing innovative and strategic approaches, including decentralizing services and HIV testing campaigns, and coordinated partnerships with increased mobilization of resources have been instrumental in the significant progress some countries have made in accelerating the scaling up of services for preventing mother-to-child transmission. For example, Malawi (Box 5.1) increased the coverage of HIV testing of pregnant women from 8% in 2004 to 50% in 2007 and 68% in 2008; in Côte d'Ivoire (Box 5.2), the percentage of pregnant women living

with HIV who received antiretroviral medicine for preventing mother-to-child transmission increased consistently from 9% in 2005 to 41% in 2008.

Although the number of pregnant women living with HIV who received antiretroviral medicine for preventing mother-to-child transmission has increased over the time in the Region, the effectiveness of the regimens used remains questionable. Single-dose nevirapine has lower efficacy than the combination drug regimens for antiretroviral prophylaxis recommended by both the 2006 (10) and 2010 (6) WHO guidelines but is still used in several countries. In 2009, 34 countries in the Region reported disaggregated data on antiretroviral regimens provided to pregnant women living with HIV. In this subset of countries, 26% reported using less efficacious single-dose nevirapine as the treatment of choice for preventing the mother-to-child transmission of HIV. It is critical that countries ensure that all eligible pregnant women receive more efficacious regimens in accordance with the new WHO guidelines on preventing mother-to-child transmission (6).

Box 5.1. Acceleration of HIV testing and counselling among pregnant women in Malawi

In 2008, Malawi reached 68% (406 000 of 599 000) of pregnant women with testing and counselling during pregnancy or childbirth. The country has demonstrated formidable expansion of HIV testing from 2004 with 8%, 24% in 2006, 50% in 2007 and to 68% in 2008.

Strong political will and strategic leadership have driven the remarkable progress made in accelerating the scaling up of services to prevent mother-to-child transmission in Malawi. The development of an acceleration plan with clear objectives, targets and strategic approaches and the existence of strong and coordinated partnerships with both development and implementing partners have been crucial to leveraging resources and technical assistance for rapidly rolling out the HIV interventions for women and children.

Innovative approaches to service delivery have also been instrumental in accelerating scale-up. For example, the annual national HIV testing week has helped to increase access to and the uptake of HIV testing but also to alleviate stigma and discrimination, thereby increasing the acceptance of HIV testing at routine service delivery points. Malawi has also improved the supply chain management system of essential commodities and strengthened the monitoring and evaluation system.

Box 5.2. Scaling up services for preventing mother-to-child transmission in Côte d'Ivoire

Côte d'Ivoire reached 41% of pregnant women living with HIV with antiretroviral medicine to prevent transmission to their children, up from 13% in 2007 and less than 10% in 2006. This is the most significant increase in percentage points among the countries in Western Africa and Central Africa. This significant progress is the result of strong advocacy, policy development, innovative programmatic approaches and sustained technical assistance. The decentralization of service delivery with a district-based approach, including establishing district operational plans, resulted in an increase in the proportion of antenatal care services that offer both HIV testing and antiretroviral medicine for preventing mother-to-child transmission from 21% in 2006 to 44% in 2008. The performance-based funding approaches introduced in selected districts contributed to motivate the health service providers and improve the quality of services and increase their uptake.

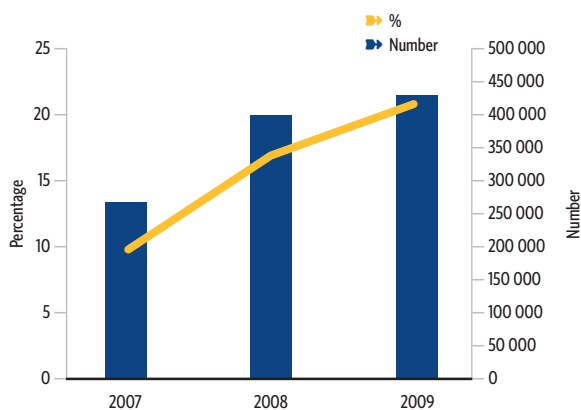
5.3 Antiretroviral prophylaxis for HIV-exposed infants

As part of the package of interventions to reduce the risk of mother-to-child transmission of HIV, all infants born to mothers living with HIV should receive antiretroviral prophylaxis. In 2009, 431 295 infants born to mothers living with HIV in 45 reporting countries received antiretroviral prophylaxis. The median proportion of HIV-exposed infants who received antiretroviral prophylaxis was 20%. Among 38 countries that reported for 2007 through 2009, the number of infants who received antiretroviral prophylaxis increased from 266 690 to 399 024 to 430 554, and the median coverage increased from 10% in 2007 to 17% in 2008 to 21% in 2009 (Fig 5.4).

Among 35 countries in the African Region that submitted data consecutively from 2007 to 2009, uptake rates of antiretroviral prophylaxis among exposed infants rose considerably, reaching 44% in Eastern and Southern Africa, 15% in Central Africa and 14% in Western Africa (Fig. 5.5), demonstrating the great differences between the subregions. The coverage rates for antiretroviral prophylaxis for HIV-exposed infants were still below the rates for pregnant women living with HIV in all three regions, especially in Eastern and Southern Africa.

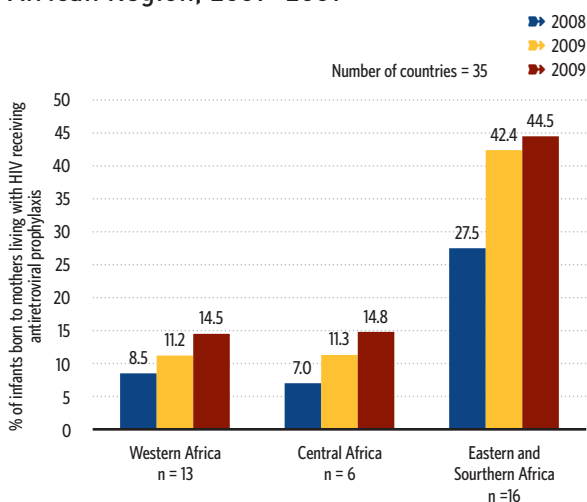
The reasons for the low coverage rate of interventions for preventing mother-to-child transmission in the African Region include the low institutional delivery rate, at 47% in 2010 (3), aggravated by unskilled attendants and weak integration of services to prevent mother-to-child transmission within maternal and newborn health services.

Fig. 5.4. Number and percentage of HIV-exposed infants receiving antiretroviral prophylaxis, data from 38 countries reporting consistently, WHO African Region, 2007–2009



Source: Database of the WHO Regional Office for Africa.

Fig. 5.5. Percentage of infants born to women living with HIV receiving antiretroviral medicine to prevent the mother-to-child transmission of HIV by subregion, WHO African Region, 2007–2009



Source: Database of the WHO Regional Office for Africa.

5.4 Treatment for children living with HIV

5.4.1 Early infant diagnosis

WHO guidelines recommend that infants exposed to HIV be tested by four to six weeks of age using virological assays, and those found HIV-positive should be started on antiretroviral therapy immediately on diagnosis (6,7). Data on health facilities providing virological tests were not collected in 2009. However, in 2008, among 40 reporting countries, the proportion of health facilities that provided virological tests for HIV on site, such as DNA polymerase

chain reaction tests, or through dried blood spot, was 8%: 1% in Central Africa and in Western Africa and 27% in Eastern and Southern Africa.

Longitudinal data on early infant diagnosis are limited, as only 7 of 46 countries submitted comparable data for the 2007, 2008 and 2009. In these countries (Burkina Faso, Central African Republic, Comoros, Guinea-Bissau, Liberia, Rwanda and Zambia), the proportion of infants born to women living with HIV who received a virological test by two months of age increased from 4% in 2007 to 10% in 2008 and 14% in 2009.

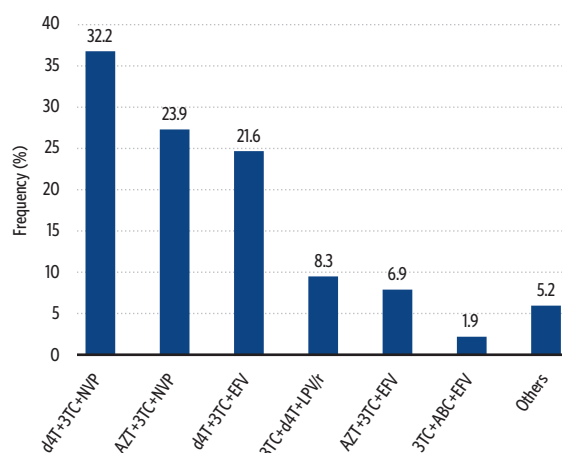
5.4.2 Antiretroviral therapy and regimens for children

By the end of 2009, 296 000 children in the African Region were receiving antiretroviral therapy, up from 224 900 in 2008, representing an increase of 32% in one year. This means that the average coverage of antiretroviral therapy among children estimated to need treatment in the Region is 26%. Notably, Botswana, Namibia and Swaziland had high coverage rates among children of 70% or higher.

The results of the WHO AIDS medicines and diagnostics service (AMDS) annual survey for 2010 (9) showed that 7.5% of the people receiving antiretroviral therapy in the 43 respondent countries in December 2009 were children. Of these children, 97% were receiving first-line regimens, with most (62%) receiving regimens containing stavudine and 57% receiving combinations containing nevirapine.

Information on specific regimens showed that 98% of children were receiving first-line regimens in accordance with 2006 WHO treatment guidelines. Fig. 5.6 presents the distribution and composition of first-line regimens among children.

Fig. 5.6. First-line regimens received by 283 000 children in 43 respondent countries in sub-Saharan Africa, December 2009



d4T: stavudine; 3TC: lamivudine; NVP: nevirapine; AZT: zidovudine; EFV: efavirenz; LPV/r: lopinavir with a ritonavir boost; ABC: abacavir.

Source: Database of the WHO Regional Office for Africa.

5.5 Challenges and the way forward

Considerable progress has been made in the past five years in addressing HIV prevention and treatment for children and their mothers in the WHO African Region. This has been made possible through the efforts of Member States, donors and partners. Several agencies such as the United States President's Emergency Plan for AIDS Relief and the Global Fund to Fight AIDS, Tuberculosis and Malaria have given priority to intervening to prevent mother-to-child transmission. The renewed global interest in maternal and child health and the evidence on the need to better link services to prevent the mother-to-child transmission of HIV with maternal, newborn and child health care have all contributed directly to the scaling up of comprehensive interventions for preventing mother-to-child transmission. The use of guidelines and tools on planning, training and monitoring and evaluation WHO and partners have developed and the provision of technical assistance for developing in-country capacity have also been enabling factors.

Despite the progress made, challenges still need to be addressed. These include weak monitoring systems that compromise the quality of data for tracking all interventions for preventing mother-to-child transmission such as family planning, the antiretroviral regimens used, early infant diagnosis and infant feeding practices for women living with HIV and for HIV-exposed infants. Procurement and supply management systems are weak, resulting in frequent stock-outs of medicines and consumables, unreliable quantification and forecasting of the needs for antiretroviral medicine, low utilization of maternal, newborn and child health care services, mainly during childbirth and

postpartum, and low utilization of family planning services due to programmatic and system weaknesses. The coverage of services for preventing mother-to-child transmission in the Central Africa and Western Africa subregions is also very low, and accelerated efforts need to be made for scaling up in these subregions.

WHO and partners are calling for renewed international commitment towards eliminating the mother-to-child transmission of HIV and preventing children from acquiring HIV infection. The countries in the African Region can eliminate children acquiring HIV infection and mitigate the negative effects of HIV on maternal health by effectively implementing WHO's 2010 recommendations and the seven strategic directions of the WHO strategic vision for preventing the mother-to-child transmission of HIV, 2010–2015 (10). Countries in the African Region need to eliminate HIV transmission from mother to child by focusing on the following: (1) translating commitment into action towards allocating more resources for preventing mother-to-child transmission; (2) improving the quality of services for preventing mother-to-child transmission within better maternal, newborn and child health services; (3) shifting from stand-alone services for preventing mother-to-child transmission towards focused antenatal care services, childbirth and postpartum care integrating HIV testing and counselling, antiretroviral prophylaxis and antiretroviral therapy services; (4) ensuring equitable access for all women and children, including the most vulnerable ones; (5) improving the capacity of health systems to ensure adequate response to all the needs of women and children; and (6) tracking progress on preventing mother-to-child transmission.

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6. SCALING UP TREATMENT AND CARE FOR PEOPLE LIVING WITH HIV

Key findings

- All countries in the WHO African Region have made substantial progress in expanding HIV treatment and care as a result of strong political commitment, technical support and substantial financial investment from domestic and international sources.
- At the end of 2009, 3 912 000 people living with HIV were receiving antiretroviral therapy in the African Region, representing coverage of 37% of those in need. The number in 2005 was only 800 000.
- At the end of 2009, antiretroviral therapy had been decentralized to 8278 health facilities in the Region, increasing from less than 2000 health facilities in 2005.
- During 2010, WHO released the revised antiretroviral therapy guidelines for infants and children, for adolescents and adults and for pregnant women. These guidelines recommend, among other things, earlier diagnosis and treatment for HIV and use of less toxic and more patient-friendly antiretroviral medicines.
- A survey conducted by WHO during 2010 found that 97% of the children and 97% of the adults receiving antiretroviral therapy were receiving first-line regimens recommended by WHO.

Since 2003 and the launch of the “3 by 5” Initiative (1), countries in the WHO African Region, in partnership with nongovernmental organizations and multilateral and bilateral partners, have made substantial progress in expanding access to HIV treatment and care. With strong national political commitment and substantial financial investment from domestic and international sources, including from the Global Fund to Fight AIDS, Tuberculosis and Malaria and the United States President’s Emergency Plan for AIDS Relief, physical and human resources, key to achieving and sustaining universal access to HIV prevention, treatment, care and support services, have been built or strengthened across the African continent.

As a result of these developments, programmatic achievements have been impressive: in about four years, the total number of health facilities providing antiretroviral therapy services quadrupled in the Region, and the number of people receiving life-saving antiretroviral medicine increased by almost 500%, reaching 3 912 000 in December 2009. This total represents more than 75% of the total number of people reported to be receiving antiretroviral therapy across all low- and middle-income countries.

Nevertheless, much remains to be done. Most people in need still cannot access life-saving treatment: estimated antiretroviral therapy coverage, based on the new criteria for treatment initiation (CD4 cell count M350 cells per mm³), was 37% at the end of 2009. As of December 2009, only Botswana and Rwanda in the African Region had already achieved universal access to antiretroviral therapy (treatment coverage of at least 80% of the people in need).

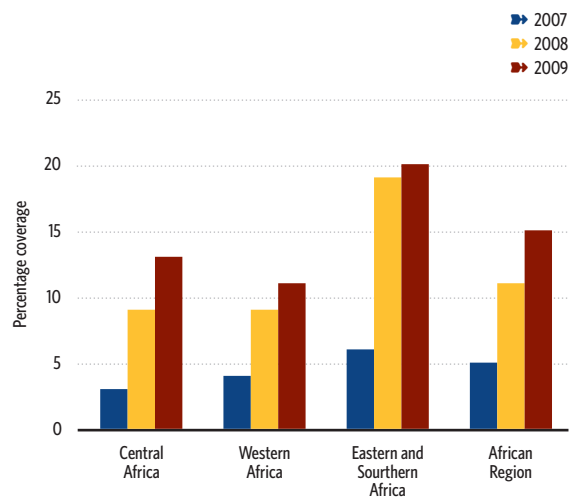
This chapter reviews the progress made by countries in the WHO African Region between 2005 and 2009 in implementing three main interventions of care and treatment for people living with HIV: co-trimoxazole prophylaxis, management of TB and HIV coinfection and antiretroviral therapy. Additional information and analysis on other relevant topics, including equity and retention issues, is available in *Towards universal access: scaling up priority HIV/AIDS interventions in the health sector. Progress report 2010* (2).

6.1 Co-trimoxazole prophylaxis

Co-trimoxazole prophylaxis is a simple, inexpensive and cost-effective intervention for people living with HIV. It has been proven to prevent the development of serious, often fatal opportunistic infections and to reduce morbidity and mortality among people living with HIV and TB (3–5).

To facilitate and accelerate the scaling up of co-trimoxazole prophylaxis, especially in resource-limited settings, in 2006 WHO published a guide on co-trimoxazole prophylaxis for

Fig. 6.1. Coverage of co-trimoxazole prophylaxis for HIV-exposed infants by subregion, WHO African Region, 2007–2009



Source: Database of the WHO Regional Office for Africa.

children and adults living with or exposed to HIV (6,7). Since WHO published this technical guidance on co-trimoxazole prophylaxis in 2006, 45 countries in the African Region have adopted the intervention. In 2008, among 25 countries that reported, the median number of people receiving co-trimoxazole prophylaxis increased to an average of about 9000 per country, ranging from 6 in Comoros to more than 460 000 in Kenya.

In 2007, 26 countries in the Region reported that slightly more than 50 000 infants born to women living with HIV were receiving co-trimoxazole prophylaxis. This figure represented an estimated coverage of only 5% of the exposed infants in need of co-trimoxazole prophylaxis in the Region. In 2008, the number of infants receiving co-trimoxazole prophylaxis jumped to more than 100 000 in 31 reporting countries and reached more than 175 000 infants exposed to or living with HIV among 33 reporting countries in 2009, 85% in the Eastern and Southern Africa subregion alone. Coverage of co-trimoxazole prophylaxis among children in the Region reached 11% in 2008 and 15% in 2009. Annex 2 shows the specific country figures.

Although the coverage of co-trimoxazole prophylaxis among children has gradually improved in all the subregions in the Region, the subregions differ considerably. In the Eastern and Southern Africa subregion, one quarter of HIV-exposed infants accessed co-trimoxazole prophylaxis within two months of birth in 2009, versus 13% in Central Africa and 11% in Western Africa (Fig. 6.1).

One of the main challenges countries must address in scaling up co-trimoxazole prophylaxis is the absence of

mechanisms to systematically identify and follow up HIV-exposed infants at and after birth. If children living with HIV are to be identified early in the course of the disease – a prerequisite for receiving co-trimoxazole prophylaxis and early antiretroviral therapy – systems need to be in place to ensure that health workers consider the possibility that infants are HIV infected at birth and at all encounters in health clinics thereafter.

6.2 Prevention, care and treatment for HIV and TB coinfection

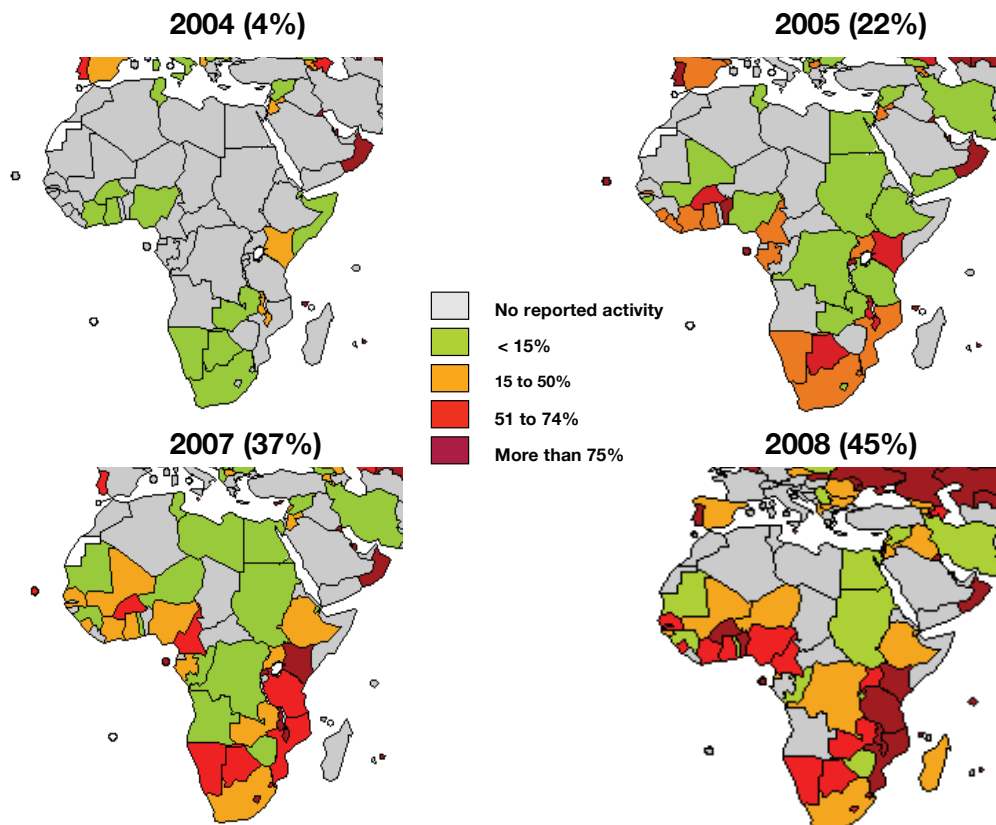
WHO recommends a set of collaborative activities designed to reduce the burden of TB and HIV coinfection (8). These activities can be grouped into three main approaches or strategies: (1) establishing mechanisms of collaboration between HIV and TB programmes, (2) implementing activities designed to reduce the burden of TB among people living with HIV and (3) implementing activities designed to reduce the burden of HIV among people with TB.

6.2.1 TB and HIV collaborative commitments, policies and strategies in the WHO African Region

The ministers responsible for health in the African Region declared TB an emergency during the fifty-fifth session of the WHO Regional Committee for Africa in Maputo in 2005. Member States were urged to develop emergency plans that include collaborative TB and HIV activities (9). In 2006, the Abuja Declaration on HIV/AIDS, Tuberculosis and Other Related Infectious Diseases (10) adopted by the African Union heads of state urged all countries to ensure that 100% of the people with TB had access to HIV testing and counselling services by 2010 and that 100% of eligible people living with HIV and TB access antiretroviral therapy by 2010. In 2009, the fifty-ninth session of the WHO Regional Committee for Africa adopted a resolution calling for intensified action for HIV prevention and TB and HIV coinfection control in the African Region (11).

In 2007, the WHO Regional Office for Africa developed a regional strategy to control the TB and HIV epidemic (12).

Fig. 6.2. Percentage of people with TB tested for HIV infection by country, WHO African Region, 2004–2008



In addition, WHO has developed several technical policies and guidelines relating collaborative TB and HIV activities (8), TB and HIV monitoring and evaluation (13), infection control (14), TB treatment (15) and guidelines that recommend early antiretroviral therapy for people living with HIV and TB regardless of their CD4 count (16).

6.2.2 Progress in implementing TB and HIV activities

In 2009, 41 countries had a joint TB and HIV plan versus 22 in 2005, and more than 40 countries submitted TB and HIV data for inclusion in the WHO global TB control report. In 2009, about four fifths of countries in the African Region had in place an infection control policy for TB in health facilities. All reporting countries from the Eastern and Southern Africa subregion had an infection control policy in place versus two thirds in Western Africa and half in Central Africa.

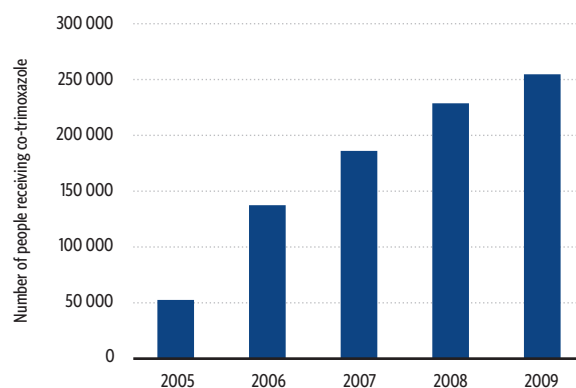
Services for people living with HIV and TB. At the end of 2008, 45% of the people with TB in the African Region were tested for HIV, and in 12 countries (Benin, Burkina Faso, Comoros, Equatorial Guinea, Kenya, Malawi, Mauritius, Mozambique, Rwanda, Sao Tome and Principe, Seychelles and United Republic of Tanzania) more than 75% of the people with TB who were in care received HIV testing services. On the whole, there has been an increasing trend in HIV testing among people with TB (Fig. 6.2).

The provision of co-trimoxazole prophylaxis to people with TB also improved between 2005 and 2009. Data provided by 33 countries show that more than 254 000 people living with TB and HIV received co-trimoxazole prophylaxis in 2009 – the vast majority in the Eastern and Southern Africa subregion. Among the 33 countries reporting comparable data in 2005 and 2009, the number of people living with TB and HIV receiving co-trimoxazole prophylaxis increased from 52 963 to 254 957 (Fig. 6.3).

A similar pattern was observed with respect for antiretroviral therapy among people living with TB and HIV. In 2009, reports received from 35 countries indicated that more than 120 000 people living with TB and HIV were receiving antiretroviral therapy, most in Eastern and Southern Africa. This represents a six-fold increase from just over 20 000 in 2005.

Despite the substantial improvements, it is essential to further expand HIV testing and counselling among people with TB and to increase access to co-trimoxazole prophylaxis and antiretroviral therapy people living with TB and HIV. In 2009, 37% of those eligible were able to access antiretroviral therapy, which is still far from the current WHO recommendation that antiretroviral therapy be initiated immediately for all people living with TB and HIV regardless of immune status.

Fig. 6.3. Number of people living with TB and HIV receiving co-trimoxazole prophylaxis, WHO African Region, 2005–2009



Source: Global tuberculosis control 2010 report (18).

TB-related services for people living with HIV. In 2009, data from 42 countries indicated that more than 1 million people living with HIV were tested for TB in the African Region. Although many more people should be tested, this represents significant progress in all the subregions (Fig. 6.4), with the vast majority being reported from countries in Eastern and Southern Africa and followed by Western Africa.

Data on the number of people living with HIV and TB accessing both antiretroviral therapy and TB treatment were scarce in the African Region before 2007: indeed, no such reports were received in 2005, and in 2006 only six countries reported about 29 000 people accessing both types of treatment. The number of countries reporting increased to 14 in 2007 and 24 in 2009, when the number of people accessing both types of treatment reached 77 000.

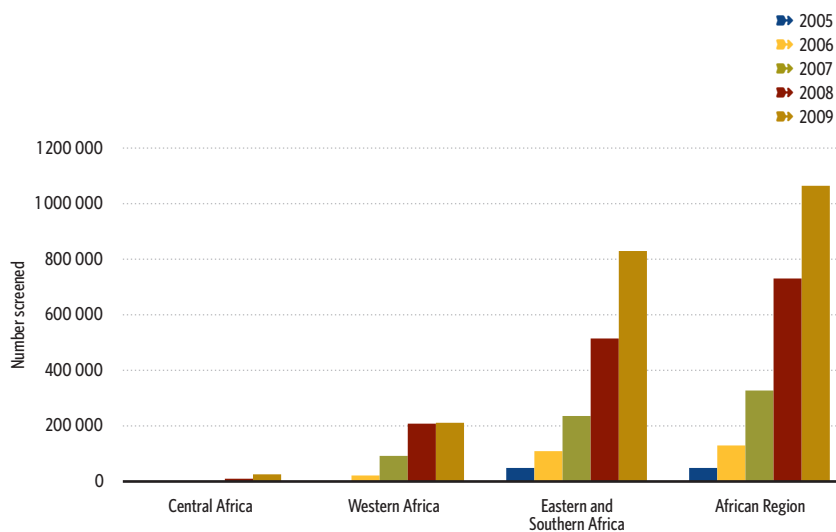
Between 2005 and 2009, reporting on access to isoniazid preventive treatment for people living with HIV improved. In 2005, reports received from eight countries indicated slightly more than 22 000 people living with HIV and TB receiving both types of treatment in the Region. In 2009, this rose to 25 countries and more than 62 000 people.

The factors that have enabled progress in implementing TB and HIV collaborative activities include the good collaboration between TB and HIV programmes, with most countries now having well-articulated national plans, policies and targets (Box 6.1). The adoption of the policy on provider-initiated testing and counselling has tremendously improved access to HIV testing and counselling services in TB clinics. The revision of TB and HIV technical manuals and guidelines has improved the capacity of clinical teams to handle both diseases and led to the revision of recording and reporting tools for monitoring TB and HIV programmes.

Some challenges need to be addressed. There are relatively fewer antiretroviral therapy sites than facilities offering TB services. This creates difficulty for health workers in facilities without both services in fully offering the TB and HIV collaborative activities. This is compounded by the

weak referral and counterreferral systems. In addition, the isoniazid preventive therapy policy has proved difficult for most countries to implement because of weaknesses in the collaboration of national TB and AIDS programmes.

Fig. 6.4. Number of people living with HIV screened for TB by subregion and by year, WHO African Region, 2005–2009



Source: Global tuberculosis control 2010 report (18).

Box 6.1. Integrated monitoring of treatment for HIV and TB in Malawi using the WHO-recommended Integrated Management of Adolescent and Adulthood Illnesses (IMAI) patient monitoring system

In Malawi, people are monitored monthly or less often if they remain healthy. Outcomes are updated every three months on the patient master cards in the registers, and these are then used for quarterly cohort analysis. Cohort analysis is carried out on the people enrolled during the most recent quarter and those ever enrolled from the time antiretroviral therapy began to be scaled up. Treatment outcomes are also determined at 12, 24 and 36 months after antiretroviral therapy started. Staff members in accredited antiretroviral therapy sites have received formal training in the national guidelines, and refresher training is carried out regularly. Quarterly supervision is carried out using standard operating procedures, and checklists ensure consistency between registers and master cards and the accuracy of cohort analyses.

These tools and cohort analyses also provide routine data on HIV-related TB. TB data are marked on the antiretroviral therapy master card and are then transferred onto the antiretroviral therapy register. TB registers are consulted during supervisory visits, and quarterly and cumulative cohort analyses provide the proportion of those on antiretroviral therapy who started this because of TB and the proportion of all people with TB who started antiretroviral therapy.

The TB programme captures HIV-related TB data. HIV status, co-trimoxazole preventive therapy and whether antiretroviral therapy has been provided is recorded on the master card of people with TB and transferred to the TB registers. HIV status assessment data from the registers are summarized on the quarterly case registration reports, and the treatment outcome reports summarize data on HIV status, co-trimoxazole preventive therapy and antiretroviral therapy. Both programmes collect routine TB and HIV data and report them to the national level.

Malawi has not worked out the best and safest way to provide a one-stop shop where these medicines can be collected from the same office. For every new site that has been accredited for antiretroviral therapy, the team of clinician, nurse and clerk is also invited to refresher antiretroviral therapy training (one day) just before the antiretroviral medicines arrive, at which the details of registration, monitoring and cohort analysis are discussed and refreshed with the participants. Established staff members working at antiretroviral therapy clinics attend refresher antiretroviral therapy training (two days) every year, and again monitoring and cohort analysis are always part of the training timetable.

6.3 Scaling up antiretroviral therapy

All coverage figures in this section already reflect the recently updated criteria for initiating antiretroviral therapy WHO adopted in 2010 (16). All countries in the African Region have adopted the public health approach to scaling up antiretroviral therapy, which is based on providing a simple, standardized and integrated service with the active participation of the people living with HIV (19). The WHO Integrated Management of Adolescent and Adulthood Illnesses (IMAI) approach (Box 6.2) has been instrumental in improving skills to deliver high-quality, integrated services in the African Region. By 2010, more than 23 African countries had participated in various types of IMAI training, including adaptation and initial IMAI introduction and training in 6 countries; training of the trainers, including training clinical teams, in 8 countries; IMAI scale-up in 6 countries; and scale-up training and post-training follow-up, including district network strengthening, in 10 countries.

Box 6.2 provides an overview of the public health approach and the IMCI and IMAI strategy many countries have used for scaling up antiretroviral therapy.

6.3.1 Increase in the number of antiretroviral therapy sites

More data have become available since 2005 on the number of health facilities providing antiretroviral therapy in the African Region. In 2005, 26 countries reported 1671 antiretroviral therapy sites, whereas in 2009, 43 countries reported 8278 antiretroviral therapy sites, with most of the sites in the Eastern and Southern Africa subregion (Table 6.1).

Table 6.1. Number of antiretroviral therapy sites by subregion and year, WHO African Region, 2005–2009

| Subregion | Number of antiretroviral therapy sites | | | | |
|-----------------------------|--|------|------|------|------|
| | 2005 | 2006 | 2007 | 2008 | 2009 |
| Central Africa | 213 | 306 | 510 | 733 | 902 |
| Western Africa | 255 | 414 | 1008 | 1374 | 1591 |
| Eastern and Southern Africa | 1203 | 1416 | 1524 | 3938 | 6154 |
| African Region | 1671 | 2136 | 4042 | 6045 | 8278 |

Box 6.2. The public health approach and IMAI strategy for scaling up antiretroviral therapy in the WHO African Region

The public health approach addresses the health needs of a population based on the principles of simplification, standardization, decentralization, equity and participation by the people receiving antiretroviral therapy and the community (19).

The main components of the public health approach to scaling up antiretroviral therapy are:

- standardizing regimens and simplifying formularies
- simplifying clinical decision-making and standardizing treatment monitoring
- standardizing the management of toxicity and drug–drug interaction
- monitoring HIV drug resistance at the population level.

Implementing a public health approach to scaling up antiretroviral therapy requires:

- decentralized, integrated delivery of care
- task-shifting and specialized support
- antiretroviral therapy free of charge at the point of service delivery
- strengthened procurement and supply management
- tracking progress.

Providing HIV services through an integrated, decentralized approach: the IMAI experience

WHO's integrated management tools and training materials for health service delivery – IMAI (20), Integrated Management of Childhood Illness (IMCI) and Integrated Management of Pregnancy and Childbirth (IMPAC) – support a strategy for delivering health services that can efficiently strengthen district-level health care in resource-limited settings. The tools allow for decentralized scale-up of health services with optimal use of human resources and support the strengthening of health systems at three levels: by building clinical teams at the decentralized level and emphasizing the role of the community in service delivery; by supporting strong programme management and logistics; and by empowering patient self-management and community involvement.

By reinforcing the ability of district-level health systems to provide integrated primary care, the tools result in improved patient referral, case management and communication between levels of the health system. Strong involvement of people living with HIV as expert patients during training and their participation in clinical teams and as community health workers support effective chronic care. The decentralization of services to the community level provides services close to home, supports family-based care and empowers patient self-management.

6.3.2 Antiretroviral therapy

The 2010 revised WHO guidelines (18,21–23) aimed at promoting (1) earlier diagnosis of HIV infection and earlier initiation of antiretroviral therapy; (2) use of less toxic and more patient-friendly regimens; (3) early initiation of prophylaxis or treatment as medically indicated for preventing the mother-to-child transmission of HIV; (4) an expanded role for laboratory monitoring for managing the people living with HIV; (5) reconceptualizing intensified TB case-finding and TB preventive therapy as integral parts of HIV treatment and care; and (6) HIV-free survival of infants born to mothers known to be living with HIV, with prolonged breastfeeding for the first 12 months of life and use of antiretroviral medicine to prevent mother-to-child transmission. By the end of 2009, 26 countries¹ in the Region had already incorporated some or all of the recommendations into their national guidelines.

The scaling up of antiretroviral therapy continued during 2009, with close to 1 million individuals newly added to those receiving the life-saving medicines during the year. This brought the number of people receiving antiretroviral therapy in sub-Saharan Africa to 3.9 million. Fifteen countries² accounted for almost 90% of the total number of people receiving antiretroviral therapy in the Region. Table 6.2 shows the increase in coverage of antiretroviral therapy in the Region during 2009 compared with the previous year.

The number of people receiving antiretroviral therapy has increased rapidly during the past five years across all three subregions in the African Region. At the end of 2005, reports from 44 countries indicated that about 800 000 people living with HIV, or only 8% of people living with HIV in need (based on current criteria for initiating antiretroviral therapy) were receiving antiretroviral therapy in the African Region.

¹ Angola, Benin, Burundi, Cameroon, Cape Verde, Central African Republic, Congo, Côte d'Ivoire, Democratic Republic of the Congo, Eritrea, Gabon, Ghana, Guinea-Bissau, Kenya, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Namibia, Sierra Leone, South Africa, Swaziland, Togo and Zambia.
² Botswana, Cameroon, Côte d'Ivoire, Ethiopia, Kenya, Malawi, Mozambique, Namibia, Nigeria, Rwanda, South Africa, Uganda, United Republic of Tanzania, Zambia and Zimbabwe.

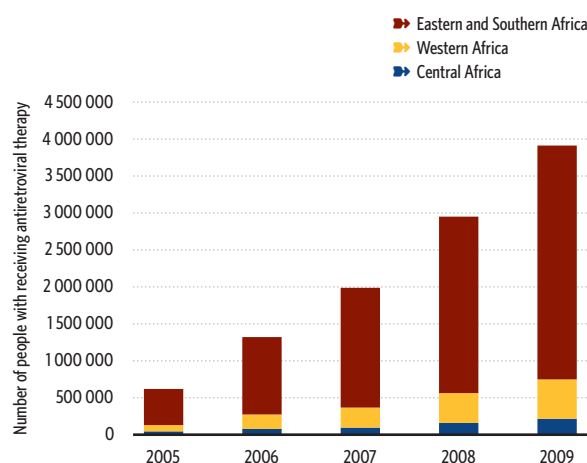
As of December 2009, the number of people living with HIV receiving antiretroviral therapy had increased almost five-fold and had reached 3 912 000 in 43 reporting countries, with an overall antiretroviral therapy coverage rate of 37%.

Among the three subregions, most people receiving antiretroviral therapy live in Eastern and Southern Africa, the number increasing from slightly over 600 000 to more than 1.65 million between 2005 and 2009 (Fig. 6.5). As a result, coverage rates increased considerably in the period, from 9% in 2005 to 23% in 2007 and 42% at the end of 2009.

Antiretroviral therapy coverage rates also increased considerably in this period in the other subregions, where the HIV prevalence is generally lower, although coverage remains lower than in Eastern and Southern Africa.

In Western Africa, the number of people living with HIV receiving antiretroviral therapy rose from slightly less than 100 000 to more than 500 000 between 2005 and 2009

Fig. 6.5. Number of people with advanced HIV infection receiving antiretroviral therapy in the WHO African Region, 2005–2009



Source: Global tuberculosis control 2010 report (78).

Table 6.2. Coverage of antiretroviral therapy, WHO African Region, 2008 and 2009

| Region or subregion | December 2009 | | | December 2008 | | |
|-----------------------------|---|--|---|---|--|---|
| | Number of people receiving antiretroviral therapy | Estimated number of people in need of antiretroviral therapy [range] | Antiretroviral therapy coverage [range] | Number of people receiving antiretroviral therapy | Estimated number of people in need of antiretroviral therapy [range] | Antiretroviral therapy coverage [range] |
| Sub-Saharan Africa | 3 911 000 | 10 600 000 [9 700 000–11 500 000] | 37% [34–40%] | 2 950 000 | 10 400 000 [9 500 000–11 300 000] | 28% [26–31%] |
| Eastern and Southern Africa | 3 203 000 | 7 700 000 [7 200 000–8 300 000] | 41% [38–45%] | 2 416 000 | 7 600 000 [7 000 000–8 100 000] | 32% [30–34%] |
| Western and Central Africa | 709 000 | 2 900 000 [2 500 000–3 200 000] | 25% [22–28%] | 533 000 | 2 800 000 [2 500 000–3 200 000] | 19% [17–22%] |

Box 6.3. South Africa's antiretroviral therapy programme: an overview

South Africa has made remarkable progress in rolling out antiretroviral therapy, with more people receiving antiretroviral medicine than any other country in the world (24,25). Antiretroviral therapy is provided in all nine provinces through the public sector health system and through nongovernmental organizations and private-sector physicians. The goal of the national strategic plan is to provide an appropriate package of treatment, care and support services to 80% of the people living with HIV and their families by 2011. This clearly reflects an ambitious target, as the data show that about 56% of the adults and children in need were receiving treatment through the public sector as of 30 November 2009. By the end of November 2009, programme data showed that 833 653 adults and 86 270 children (younger than 15 years) were receiving treatment. This is an increase of 30% for children and 26% for adults from 2008 to 2009. South Africa's antiretroviral therapy programme reached 81% of children in need of antiretroviral medicine in 2009 and 55% of adults in need.

The United States President's Emergency Plan for AIDS Relief is one of the largest donors supporting antiretroviral therapy provision in South Africa. As of September 2009, the Emergency Plan supported site-level service delivery for 589 808 of the people receiving treatment from the public sector (a subset of the number reported above) and an additional 57 164 people at nongovernmental organization and private-sector sites. Although the exact figures are unknown, an additional 51 633 adults and children were reported to be receiving antiretroviral therapy in the private sector in 2009; this number may be misleading, as 86 000 people were estimated to be receiving treatment through workplace treatment programmes and disease management providers in 2008.

Although obtaining accurate figures for the number of people currently receiving treatment remains a challenge, South Africa clearly leads antiretroviral therapy provision in the world. Estimating the need for antiretroviral therapy and calculating the exact number enrolled in treatment programmes can be difficult, even with the best systems in place. South Africa's antiretroviral therapy programme lacks one unified monitoring system, creating extreme difficulty in collating an accurate number of people currently receiving treatment or in assessing survival rates. The Department of Health is reviewing the various antiretroviral therapy data collection systems implemented in the country to determine the most appropriate monitoring system for roll-out to antiretroviral therapy sites.

The number of accredited antiretroviral therapy sites at public facilities increased in the reporting period, and more sites are in the process of being accredited to expand antiretroviral therapy even further. Task-shifting is a new policy that is being piloted in some provinces, in which professional nurses and, in some cases, doctors from the private sector assume management of antiretroviral therapy cases after a public health physician initiates treatment. These pilot projects have shown positive results in addressing resource constraints while enabling better access to services.

Community caregivers, under the auspices of nongovernmental organizations, community-based organizations and faith-based organizations, offer home- and community-based care and support services largely at the community and household level. Many of these organizations are supported directly through the Department of Social Development and the Care and Support Programme of the Department of Health's Directorate of HIV, AIDS and STIs, or directly through development partners. Organizations providing home- and community-based care and support services reported to the Department of Social Development that they were supporting 411 867 orphans and vulnerable children in the 2008/2009 fiscal year and 449 732 children in the first three quarters of 2009 (up to December 2009).

Source: Country progress report on the Declaration of Commitment on HIV/AIDS: 2010 report (24).

(25% coverage among people in need) and from as few as 52 000 to more than 215 000 in Central Africa (24% coverage among people in need).

Several countries have made remarkable progress in expanding access to antiretroviral therapy. South Africa has rapidly scaled up its national antiretroviral programme and now has more people receiving antiretroviral therapy than any other country in the world (Box 6.3). As of December 2009, Botswana and Rwanda had already achieved universal access to antiretroviral therapy, defined as providing antiretroviral medicine to at least 80% of the people in need, and Benin, Ethiopia, Mali, Namibia, Senegal, Swaziland and Zambia recorded coverage rates of at least 50%. Annex 4 shows the full list of countries reporting the numbers of people receiving antiretroviral therapy for 2009.

Despite the progress made, efforts need to be redoubled to expand access to antiretroviral therapy, as most people

in most countries are still unable to access this life-saving intervention. In this context, expanding access to HIV testing and counselling services, including through provider-initiated approaches, must continue to be a priority to ensure timely diagnosis of HIV infection and immediate enrolment in treatment.

Laboratory monitoring and services. Data reported by countries in 2008 show a considerable expansion in the number of antiretroviral therapy sites using CD4 monitoring on site or through referrals. According to the database of the WHO Regional Office for Africa, 3647 health facilities were using CD4 monitoring in the African Region in 2008 versus 1765 in 2007. However, more must be done to ensure that all individuals, including pregnant women, have access to high-quality CD4 testing to determine treatment eligibility.

To enhance laboratory capacity in the Region, partnerships with national and international institutions have been

formed and strengthened during the past few years. Through these partnerships, 33 laboratory technicians from 12 countries¹ were trained in HIV infection diagnosis and monitoring, 15 laboratory assessors were trained from Botswana, Cameroon, Kenya, Lesotho, Nigeria, Rwanda, Senegal, South Africa and Zimbabwe for the WHO Regional Office for Africa laboratory accreditation system and 13 countries² were supported in developing plans of action for strengthening national laboratory services.

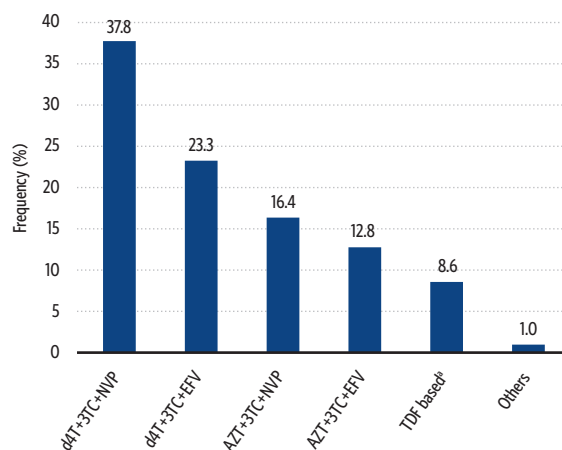
In addition, eight countries participated in the WHO Regional Office for Africa accreditation process, and WHO provided support to the Southern Africa Development Community in assessing and selecting laboratories that will serve as supranational laboratories for HIV, TB and malaria in the Eastern and Southern Africa subregion.

Despite the important progress in strengthening national laboratories and mobilizing resources from both the public and private sectors, several programmatic bottlenecks remain, including inadequate laboratory staff and national reference laboratories, limited quality assurance programmes and insufficient external quality assessment schemes for enumerating and identifying CD4 T cells and measuring HIV drug resistance (26). Frequent stock-outs of the laboratory reagents necessary for HIV testing and for monitoring the people receiving HIV treatment were also identified. During the fifty-ninth session of the WHO Regional Committee of Africa in 2009, Member States were urged to strengthen their laboratory capacity in accordance with the resolution on drug resistance related to HIV, TB and malaria (11). This may provide further momentum to increase investment in strengthening and expanding laboratory services in the African Region.

Procurement and supply management. Although the vast majority of countries in the Region have national policies or guidelines for procurement and supply management, reported data continue to indicate that considerably stronger efforts are needed to ensure a continuous and reliable supply of antiretroviral medicine and other commodities. Fifteen of 32 reporting countries (47%) experienced stock-outs of at least one antiretroviral drug in 2009. The stock-out rate in 2007 was 33% (8/24) and 50% (16/32) in 2008 (27).

Adult antiretroviral regimens. The results from the WHO AIDS medicines and diagnostics service (AMDS) annual survey for 2010 on antiretroviral therapy showed that 92% of people who were receiving antiretroviral therapy in the 43 countries in December 2009 were adults (2). Most adults

Fig. 6.6. First-line antiretroviral regimens received by adults in 43 sub-Saharan African countries (n = 3 500 000), December 2009



d4T: stavudine; 3TC: lamivudine; NVP: nevirapine; EFV: efavirenz; AZT: zidovudine; TDF: tenofovir.
 *Regimens containing tenofovir include: tenofovir + emtricitabine + efavirenz; tenofovir + emtricitabine + nevirapine; tenofovir + lamivudine + efavirenz; and tenofovir + lamivudine + nevirapine.
 Source: Database of the WHO Regional Office for Africa.

(97%) were receiving first-line regimens. Information on specific first-line regimens showed that more than 99% were receiving regimens recommended in the 2006 WHO treatment guidelines. Fig. 6.6 shows the most commonly used regimens in the African Region.

Two per cent of adults were receiving a second-line regimen. Of these, 49% were receiving zidovudine and 30% were receiving regimens containing tenofovir. Lopinavir with a ritonavir boost was the predominant protease inhibitor, received by 92% of adults. However, 6% of adults received a second-line regimen without a protease inhibitor, although WHO considers protease inhibitors the backbone of second-line regimens.

Information on specific second-line regimens showed that 87% of adults were receiving regimens recommended in the 2006 WHO treatment guidelines.

Although impressive achievements have been obtained in recent years in improving procurement and supply management systems across Africa, important challenges remain unaddressed, including the often unreliable quantification and forecasting of antiretroviral medicine needs; the limited coordination and interaction between national AIDS programmes and central medical stores; and the inadequacy of pharmacovigilance and logistics management information systems, all of which continue to adversely affect the performance and functioning of HIV programmes in many countries. It is essential that new WHO early warning indicators for antiretroviral stock-outs and overstocking (28) be promptly monitored to minimize

1 Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Congo, Côte d'Ivoire, Gabon, Guinea, Mali, Senegal and Tunisia.

2 Burkina Faso, Central African Republic, Côte d'Ivoire, Equatorial Guinea, Guinea, Liberia, Malawi, Lesotho, Mauritius, Mozambique, Sierra Leone, Sao Tome and Principe and the United Republic of Tanzania.

Box 6.4. List of early warning indicators recommended by WHO

Early warning indicator 1. Antiretroviral therapy prescribing practices

1. Percentage of adults initiating antiretroviral therapy at the site who are initially prescribed, or initially pick up from the pharmacy, an appropriate first-line antiretroviral therapy regimen: suggested target 100%.

1-P. Percentage of children initiating antiretroviral therapy at the site who are initially prescribed, or whose caregiver initially picks up from the pharmacy, an appropriate first-line antiretroviral therapy regimen: suggested target: 100%.

Early warning indicator 2. People lost to follow-up 12 months after initiating antiretroviral therapy

Percentage of people initiating antiretroviral therapy at the site who are lost to follow-up 12 months later: suggested target M20%.

Early warning indicator 3. People receiving appropriate first-line antiretroviral therapy at 12 months

3a. Percentage of adults initiating antiretroviral therapy at the site who are taking an appropriate first-line antiretroviral therapy regimen 12 months later: suggested target U70%.

3a-P. Percentage of children initiating antiretroviral therapy at the site who are taking an appropriate first-line antiretroviral therapy regimen 12 months later: suggested target U70%.

Early warning indicator 4. On-time pick-up of antiretroviral drugs

Percentage of people initiating antiretroviral therapy at the site who picked up all prescribed antiretroviral drugs on time during their first 12 months of antiretroviral therapy: suggested target U90%.

Early warning indicator 5. Keeping appointments at the antiretroviral therapy clinic

Percentage of people initiating antiretroviral therapy at the site who attended all scheduled or expected clinical consultations on time during the first 12 months of antiretroviral therapy: suggested target U80%.

Early warning indicator 6. Continuity of antiretroviral drug supply

Percentage of months in a designated year in which there were no antiretroviral drug stock-outs: suggested target 100%.

Early warning indicator 7 (optional). Adherence to antiretroviral therapy

Percentage of patients initiating antiretroviral therapy at the site who demonstrate 100% adherence by pill count: suggested target U90%.

Early warning indicator 8 (optional). Viral load suppression 12 months after initiating antiretroviral therapy

Percentage of people initiating antiretroviral therapy at the site whose viral load is <1000 copies/ml after 12 months of antiretroviral therapy: suggested target U70%.

Source: HIV drug resistance early warning indicators: World Health Organization indicators to monitor HIV drug resistance prevention at antiretroviral treatment sites. June 2010 update (30).

the number of stock-outs of medicines and consumables experienced in the African Region and to mitigate the negative effects.

Surveillance and monitoring of HIV drug resistance.

WHO recommends that countries develop and implement a national strategy for preventing and assessing HIV drug resistance that includes the following components: developing a national HIV drug resistance working group and a costed five-year plan; regularly assessing early warning indicators for HIV drug resistance from all antiretroviral therapy sites or representative sites; conducting surveys to monitor the prevention of HIV drug resistance and associated factors in sentinel antiretroviral therapy sites; conducting threshold surveys of HIV drug resistance transmission in geographical areas where antiretroviral therapy has been widespread for three years or more; establishing an HIV drug resistance database; designating an in-country or regional WHO-accredited HIV drug resistance genotyping laboratory; reviewing and

supporting activities for preventing HIV drug resistance; and preparing an annual HIV drug resistance report with evidence-informed recommendations for action to minimize HIV drug resistance (29).

Monitoring early warning indicators. These are indicators that monitor antiretroviral therapy sites and personal factors that are associated with the emergence of HIV drug resistance, such as prescribing practices, people receiving antiretroviral therapy who are lost to follow-up, retention on first-line drugs at 12 months, keeping appointment on time, picking up antiretroviral drugs on time and continuity of drug supply (Box 6.4) (30). In the countries where information on viral load and pill counts is routinely collected, viral suppression (viral load <1000 copies/ml) at 12 months and adherence are also monitored.

From 2007 to 2010, 26 countries conducted and completed surveys for monitoring early warning indicators (Table 6.3). Two countries (Malawi and Namibia) have published the

Table 6.3. Completed monitoring of early warning indicators

| Country | Year data abstraction started | Number of sites |
|---------------------|-------------------------------|-----------------|
| Benin | 2009 | 5 |
| Burkina Faso | 2008 | 9 |
| Burkina Faso | 2009 | 21 |
| Burundi | 2009 | 19 |
| Cameroon | 2008 | 10 |
| Cameroon | 2009 | 19 |
| Ethiopia | 2007 | 14 |
| Ghana | 2008 | 27 |
| Ghana | 2009 | 75 |
| Guinea | 2009 | 4 |
| Kenya | 2009 | 18 |
| Lesotho | 2009 | 27 |
| Malawi | 2006 | 103 |
| Mozambique | 2006 | 4 |
| Mozambique | 2008 | 17 |
| Mozambique | 2009 | 27 |
| Namibia | 2009 | 9 |
| Niger | 2009 | 11 |
| Rwanda | 2009 | 27 |
| Senegal | 2008 | 20 |
| Togo | 2009 | 10 |
| Uganda | 2007 | 41 |
| Uganda | 2008 | 76 |
| Zimbabwe (adults) | 2008 | 15 |
| Zimbabwe (adults) | 2009 | 40 |
| Zimbabwe (children) | 2008 | 2 |

results of monitoring early warning indicators in peer-reviewed journals. In 2010 only, 14 countries monitored early warning indicators, 4 of these for the first time.

Surveillance of transmitted HIV drug resistance. The surveillance of transmitted HIV drug resistance among recently infected individuals is conducted in geographical areas of resource-limited countries where transmitted HIV drug resistance is likely to occur. The surveys are called HIV drug resistance threshold surveys because transmitted resistance to relevant antiretroviral drugs and drug classes is categorized as being above or below two thresholds: 5% and 15% (31).

Since 2002, 44 HIV drug resistance threshold surveys have been implemented in 19 African countries. The final results are available from 34 threshold surveys, of which 21 (12 of which are from African countries) have been published in peer-reviewed journals. All the completed surveys have reported low (<5%) levels of transmitted HIV drug resistance, except in five countries reporting moderate levels (5–15%) of transmitted HIV drug resistance to either nucleoside reverse-transcriptase inhibitors or non-nucleoside reverse-transcriptase inhibitors or both drug classes (Table 6.4).

Monitoring the emergence of HIV drug resistance. As of December 2010, 47 monitoring surveys have been implemented in 11 countries to assess the emergence of acquired HIV drug resistance using a WHO generic protocol (Table 6.5).

The results are available from 13 surveys conducted in 4 African countries (Table 6.6).

Table 6.4. List of the sites for surveillance of transmitted HIV drug resistance in the WHO African Region

| | Year survey started | Country | Name of geographical area or city surveyed |
|--|---------------------|--------------|--|
| Moderate non-nucleoside reverse-transcriptase inhibitor transmitted resistance (5–15%) | 2009 | Burkina Faso | Ouagadougou |
| | 2006 | Cameroon | Yaoundé |
| | 2009 | Malawi | Lilongwe |
| | 2009 | Mozambique | Maputo City |
| | 2009 | South Africa | KwaZulu-Natal Province |
| Moderate nucleoside reverse-transcriptase inhibitor transmitted resistance (5–15%) | 2009 | Burkina Faso | Ouagadougou |
| | 2006 | Cameroon | Douala |

Table 6.5. Countries that have completed or are conducting surveys to assess acquired HIV drug resistance, WHO African Region, December 2010

| Country | Number of surveys per country |
|--------------|-------------------------------|
| Burkina-Faso | 1 |
| Burundi | 4 |
| Cameroon | 1 |
| Ghana | 10 |
| Malawi | 10 |
| Mozambique | 1 |
| Namibia | 3 |
| Nigeria | 2 |
| Senegal | 1 |
| Zambia | 2 |
| Zimbabwe | 12 |
| Total | 47 |

Table 6.6. Surveys of acquired HIV drug resistance for which the results are available, WHO African Region, December 2010

| Country | Year survey started | Name of site |
|------------|---------------------|--|
| Burundi | 2007 | Bujumbura Site A |
| | 2007 | Bujumbura Site B |
| Malawi | 2008 | Lilongwe Lighthouse |
| | 2006 | Mzuzu |
| | 2008 | Mzuzu |
| | 2006 | Thyolo |
| | 2006 | Lighthouse Trust |
| | 2006 | Queen Elizabeth Central Hospital |
| | 2008 | Queen Elizabeth Central Hospital |
| | 2008 | Thyolo |
| Mozambique | 2007 | Maputo Central (Paediatric Day) Hospital |
| Nigeria | 2008 | Facility 1 (Abuja) |
| | 2008 | Facility 2 (Abuja) |

WHO HIV Drug Resistance Laboratory Network in the WHO African Region

As of 2010, five national laboratories, in Cameroon (Yaoundé), Kenya (Kisumu), South Africa (Johannesburg), Uganda (Entebbe) and Senegal (Dakar), have been accredited for monitoring HIV drug resistance. Accreditation is pending in two additional national laboratories (assessed in 2009): Côte d'Ivoire (Abidjan) and Ethiopia (Addis Ababa).

Preventing the unnecessary emergence of HIV drug resistance is vital to the success of scaling up antiretroviral therapy in the African Region. More and more countries have implemented one or more components of the WHO strategy for HIV drug resistance. Early warning indicators should be the basis for countries' strategies for preventing HIV drug resistance because early warning indicators can be collected at all sites regardless of size and provide powerful information about possible HIV drug resistance in the absence of HIV drug resistance testing.

Future success depends on ongoing country commitment, strengthening the regional laboratory network, successfully integrating these strategic elements into routine antiretroviral therapy programme practice, establishing partnerships with local, national and regional partners and stakeholders and ensuring the ongoing support of international funding organizations.

The effects of antiretroviral therapy. More people are living longer, and AIDS-related deaths are declining as access to treatment has expanded. The *UNAIDS report on the global AIDS epidemic 2010* (33) states that AIDS-related deaths decreased by 18% in southern Africa over a nine-year period. The estimated annual number of AIDS-related deaths in Botswana declined by more than half and by almost one third in Kenya. Table 6.7 shows the countries in the African Region with reported declines in the estimated annual AIDS-related mortality.

In addition, increased access to HIV treatment has had a secondary dividend of stopping people from acquiring HIV infection. As more countries are using effective treatment regimens to prevent HIV transmission to babies, the total number of children born with HIV has decreased. An estimated 370 000 [230 000–510 000] children were newly infected with HIV in 2009, a decline of 24% from five years earlier.

Antiretroviral therapy has been associated with a reduction in the burden of care placed on often overwhelmed health systems, particularly on inpatient care services, and with a decrease in mortality among health workers in countries highly affected by the epidemic (34). Evidence indicates that capacity put in place to enable antiretroviral therapy programmes to be rolled out, such as drug supply management, has had broader positive effects on other health services in the African Region (35,36). However, the numbers of people who need antiretroviral therapy are so large that the infrastructure, systems and staff required to properly monitor treatment retention and loss are becoming increasingly inadequate as programmes are scaled up.

Table 6.7. Decline in estimated annual AIDS mortality between 2001 and 2009 in 16 countries in the WHO African Region

| Country | Estimated AIDS-related deaths of adults and children | | Estimated decline in AIDS mortality deaths (%) |
|-----------------------------|--|--------|--|
| | 2001 | 2009 | |
| Benin | 3 100 | 2 700 | 13 |
| Botswana | 15 000 | 5 800 | 61 |
| Burkina Faso | 15 000 | 7 100 | 53 |
| Central African Republic | 15 000 | 11 000 | 27 |
| Congo | 5 800 | 5 100 | 12 |
| Côte d'Ivoire | 51 000 | 36 000 | 29 |
| Guinea | 6 300 | 4 700 | 25 |
| Kenya | 120 000 | 80 000 | 33 |
| Malawi | 68 000 | 51 000 | 25 |
| Mali | 7 200 | 4 400 | 39 |
| Namibia | 8 100 | 6 700 | 17 |
| Rwanda | 15 000 | 4 100 | 73 |
| Uganda | 89 000 | 64 000 | 28 |
| United Republic of Tanzania | 110 000 | 86 000 | 22 |
| Zambia | 68 000 | 45 000 | 34 |
| Zimbabwe | 130 000 | 83 000 | 36 |

Source: UNAIDS report on the global AIDS epidemic 2010 (33).

6.4 Challenges and the way forward

The revised 2010 WHO antiretroviral therapy guidelines, which now recommend earlier treatment, have increased the number of people eligible for treatment to 10 million in the African Region. Innovative and efficient models will be required to substantially increase access to treatment and care interventions beyond the current coverage of 37%. Integrating these services into existing sexual and reproductive health, maternal, newborn and child health, TB and community-based services will go a long way in increasing access and sustaining the scale-up process. Maintaining the quality of HIV treatment and care services as countries continue to decentralize is a priority to avoid

high mortality rates and emerging drug resistance. The training of health workers at all levels is another priority, using effective approaches such as IMCI and IMAI, which promote clinical teams, mentoring, task-sharing and integrating services. The cost of antiretroviral drugs continues to decline, especially those used as first-line regimens, but non-drug-related costs such as diagnostics, inpatient care, laboratory monitoring, management of toxicity and staff costs are rising. This needs to be addressed, and new approaches are being designed that will include using simple regimens, easier monitoring and laboratory methods, community participation and initiating treatment early through expanded HIV testing and counselling.

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7. LOOKING FORWARD

Significant progress has been made in scaling up HIV prevention, treatment, care and support in the WHO African Region in the past five years. HIV treatment and care services have been rapidly scaled up in the Region (1). In 2009 alone, almost 1 million additional individuals received life-saving antiretroviral medicines. By the end of 2009, an estimated 4 million individuals were receiving antiretroviral therapy in the Region. Expanding access to treatment has contributed to a significant decline in deaths among people living with HIV between 2001 and 2009, ranging from 12% in Congo to as high as 73% in Rwanda. However, the coverage of HIV services is not universal, with only 37% of individuals in need currently receiving antiretroviral therapy. This means that more than 6 million additional people require antiretroviral therapy. This implies that, in addition to accelerated efforts, new models are necessary to enhance the efficiency and effectiveness of service delivery.

The HIV response in the WHO African Region has started yielding positive results, since the number of people newly infected with HIV declined by 25% in 22 countries from 2001 to 2009 (2). The number of people acquiring HIV infection, especially among women 15–24 years old, has been significantly reduced in some countries (3). Behavioural change has been effective in reducing the prevalence of HIV infection among young people (3). Nevertheless, people are still acquiring HIV infection at unacceptable rates in the Region.

The number of children newly infected with HIV has dropped significantly as a result of scaled-up programmes to prevent the mother-to-child transmission of HIV. The percentage of pregnant women living with HIV who received antiretroviral medicine for preventing mother-to-child transmission in sub-Saharan Africa increased from 15% in 2005 to 45% in 2008 and to 54% in 2009 (1). This progress seen in the Region and elsewhere has resulted in UNAIDS calling for the virtual elimination of HIV infection among children by 2015.

Although surveillance systems have improved considerably in the African Region, many countries still have weak health information systems. Epidemiological information on the key populations at higher risk of HIV infection is limited or of poor quality. This problem is compounded by the absence of strong national health information and vital registration systems. Building stronger HIV surveillance and other health information data collection systems is essential to “knowing your epidemic” and informing national HIV responses.

The main challenges in providing HIV prevention, treatment, care and support services in countries in the African Region include the slow uptake of HIV testing and counselling services, insufficient coverage in scaling up interventions for preventing mother-to-child transmission with the aim of moving towards eliminating the vertical transmission of HIV and inadequate organization of health services in delivering treatment, care and support services for people living with HIV, including patient tracking and monitoring. There are also health system challenges such as human resource constraints, weak procurement and supply management systems resulting in stock-outs, inadequate financing or resource allocation, weak surveillance and monitoring systems, including systems for monitoring HIV drug resistance and pharmacovigilance, and tools for measuring incidence and effects.

The current momentum in scaling up HIV prevention, treatment, care and support needs to be sustained towards achieving the Millennium Development Goals. Countries should do more in addressing the prevention needs of vulnerable populations, including young people, serodiscordant couples, women and children as well as key populations at higher risk of HIV exposure and infection. Attention should be given to establishing legal frameworks that aim at reducing stigma and discrimination and decriminalizing HIV transmission.

Core interventions need to be scaled up, including HIV testing and counselling, preventing mother-to-child transmission, safe medical male circumcision, preventing and controlling other sexually transmitted infections, promoting the use of condoms and counselling for risk reduction specifically focused on young people and providing antiretroviral therapy. Stronger links need to be established between HIV prevention and treatment, and the implementation of Treatment 2.0 should be promoted using the new WHO guidelines. Eliminating the mother-to-child transmission of HIV is a feasible goal if comprehensive services for preventing mother-to-child transmission are integrated with maternal, newborn and child health care and sexual and reproductive health care. WHO emphasizes the special need to provide lifelong antiretroviral therapy for eligible pregnant women for their own health and prevention, highlighting the importance of links to Treatment 2.0 (4). Actively involving communities in these efforts will be crucial.

The existing links and synergy between HIV programmes, maternal, newborn and child health programmes and health

system strengthening need to be built on and expanded. HIV is a major contributing factor to the high morbidity and mortality rates among mothers and children in many African countries. The two top causes of death among women of reproductive age are HIV and AIDS and complications related to pregnancy and childbearing, which account for 19% and 15% of all deaths among women aged 15–44 years, respectively (5). The important adverse effect of the HIV epidemic on the maternal mortality ratio is especially visible in the Eastern and Southern Africa subregion. Currently, the set of interventions for HIV infection among pregnant or postpartum women, which should include access to antiretroviral drugs, is not part of the set of maternal health interventions for women who are HIV-negative.

Progress towards achieving Millennium Development Goal 4 has been slow in the African Region (6). In the five countries with the highest adult prevalence of HIV infection worldwide, HIV is the single leading cause of mortality among children younger than five years and responsible for between 41% and 56% of deaths. The large majority (91%) of the global AIDS deaths among children (280 000) occur in the African Region (2). The close linkage between inadequate progress in reducing mortality among children younger than five years and the inadequate progress in reducing maternal mortality further underscores the close links between Millennium Development Goals 4, 5 and 6.

The links between Millennium Development Goals 4, 5 and 6 call for greater collaboration between maternal, newborn and child health and HIV constituencies to provide a more focused and integrated approach to delivering services. This will allow women with HIV – and their children – to benefit from improved HIV treatment and care and improved reproductive health services. Rolling out effective delivery of HIV and maternal, newborn and child health interventions must therefore go hand in hand with strengthening health systems. This requires building capacity at all levels of the national health system for integrated delivery of services, emphasizing the district level.

Effective tools can speed up the process of integrating HIV into maternal, newborn and child health services by strengthening health systems. Such tools include IMAI, which has been instrumental in scaling up antiretroviral therapy, and related services such as those for preventing mother-to-child transmission and for TB. Other related tools currently used at the country level include IMCI and IMPAC. Currently, half the countries in the Region are in the expansion phase of IMAI (7), and further investment is therefore needed to take antiretroviral therapy and the related services as close to communities as possible.

Countries need to continually review the modes of HIV transmission to better “know their epidemics”, conduct

regular programme reviews and tailor their national HIV responses to their specificities and local contexts.

The Global Health Sector Strategy for HIV, 2011–2015 adopted by the World Health Assembly in May 2011 (8) will guide the health sector response to the HIV epidemic to achieve universal access to prevention, diagnosis, treatment, care and support. The Strategy reaffirms global goals and targets for the health sector response to HIV, identifies four strategic directions to guide national responses and outlines WHO’s contributions within each strategic direction. The Strategy was developed as the health sector contribution to the broader multisectoral response to HIV outlined in *Getting to zero: UNAIDS strategy 2011–2015* (9).

The WHO Strategy promotes a long-term, sustainable HIV response by strengthening health and community systems, tackling the social determinants of health that both drive the epidemic and hinder the response and protecting and promoting human rights and gender equity as essential elements of the health sector response. It strengthens integration between HIV and other health services, improving both impact and efficiency. It calls on the world to build on the collaboration, innovation and investment that have forged hard-won progress to date, establishing the foundation for success over the next five years.

The four strategic directions are as follows.

Strategic direction 1: Optimize HIV prevention, diagnosis, treatment and care outcomes. Integrate and improve and sustain the quality, effectiveness and coverage of HIV-specific interventions and approaches and identify new HIV interventions as evidence emerges.

Strategic direction 2: Leverage broader health outcomes through HIV responses. Strengthen links and synergy between HIV and other related health programmes, notably for sexual and reproductive health, maternal, newborn and child health, TB, drug dependence and harm reduction.

Strategic direction 3: Build strong and sustainable systems. Build effective, efficient and comprehensive health systems in which HIV and other essential services are available, accessible, affordable and sustainable.

Strategic direction 4: Reduce vulnerability and remove structural barriers to accessing services. The health sector must reduce risk and vulnerability by removing structural barriers to accessing high-quality HIV services for key populations at higher risk.

The following areas will be in focus in supporting the implementation of the strategic directions in the African Region.

Strategic planning. The national health sector response to HIV should be guided by a national strategic planning process that reviews, plans and sets priorities among specific interventions and service delivery models that best meet national health needs. WHO will provide support to countries to strengthen national capacity to develop costed national strategic plans and operational plans for the health sector response to HIV as basis for demand-driven technical support. This will include support for HIV strategic and operational planning for the health sector response; support for integrating HIV strategic plans into national health sector development plans, including national strategic applications to the Global Fund to Fight AIDS, Tuberculosis and Malaria; support for advocating the integration of national health sector development plans into broader national development frameworks, such as national poverty reduction strategy papers and other national development plans and frameworks; and support for joint programme reviews and impact assessment. A national strategic planning process that reviews, plans and sets priorities among specific interventions and service delivery models that best meet national health needs should guide the national health sector response to HIV.

Prevention. WHO will work with countries in scaling up interventions and services for both provider-initiated HIV testing and counselling and client-initiated HIV testing and counselling, HIV testing of blood donors, detecting and managing sexually transmitted infections, male circumcision and HIV prevention among people living with HIV. Increasing attention has to be paid to specific considerations for HIV prevention among young people, interventions aimed at discordant couples and key populations at higher risk and eliminating mother-to-child transmission, in conjunction with eliminating neonatal syphilis.

Treatment. Focus will be put on supporting countries in adapting and scaling up the implementation of the 2010 WHO antiretroviral therapy guidelines. This will be backed with working with countries to strengthen procurement and supply management systems to ensure uninterrupted supplies of medicines and other commodities and support for strengthening laboratory capacity to ensure high-quality

diagnosis and monitoring of HIV and sexually transmitted infections. This will include working with partners to support the development of laboratory policies and strategic plans, to strengthen laboratory capacity for culture and antimicrobial resistance testing for *Neisseria gonorrhoeae* and etiological testing for sexually transmitted infections and to strengthen laboratory capacity towards accreditation. Attention will also be paid to pharmacovigilance and to surveillance and monitoring of HIV drug resistance.

Strategic information. Focus will be put on supporting countries in strengthening capacity and systems to collect and apply strategic information for analysing the situation and for monitoring the response. This will include support for HIV surveillance to track the trends and magnitude of the HIV epidemic in accordance with the WHO/UNAIDS guidelines on second-generation surveillance and support for health sector monitoring and evaluation systems. This will involve developing costed monitoring and evaluation plans and strengthening the capacity of countries to monitor the people receiving HIV treatment and care; monitoring of the prevention of mother-to-child transmission towards eliminating mother-to-child transmission; and monitoring of the people living with HIV and TB in accordance with the WHO strategy on the three I's (intensified case-finding, isoniazid preventive therapy and TB infection control for people living with HIV). More attention will be paid to strengthening the capacity of countries to collect, analyse and use plans for and monitoring and evaluating the health sector response. HIV programme information must be linked to broader health information systems to ensure that robust, current and accurate information is gathered on national responses to HIV.

Funding. Mobilizing additional domestic and external resources will be critical. WHO will provide support for mobilizing resources through funding mechanisms including the Global Fund to Fight AIDS, Tuberculosis and Malaria, the United States President's Emergency Plan for AIDS Relief and other partners and continue with its advocacy for countries to honour the commitments as expressed in the 2001 Abuja Declaration on HIV/AIDS, Tuberculosis and Other Related Infectious Diseases (10).

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Annex 1. Number and percentage of health facilities providing HIV testing and counselling by country and subregion, WHO African Region, 2007–2009

| Country and subregion | Number of health facilities where HIV testing and counselling is available | | | Percentage of health facilities providing HIV testing and counselling services | | | Number of health facilities providing HIV testing and counselling services per 100 000 population | | Number of health facilities in 2009 |
|--|--|--------|--------|--|------|------|---|------|-------------------------------------|
| | 2007 | 2008 | 2009 | 2007 | 2008 | 2009 | 2008 | 2009 | |
| Angola | 154 | 221 | 285 | 7 | 11 | 14 | 2.8 | 3.3 | 2 063 |
| Burundi | 167 | 266 | 319 | 22 | 36 | 43 | 6.4 | 7.4 | 746 |
| Cameroon | 1 107 | 1 770 | 2 025 | 37 | 60 | 68 | 20.2 | 21.4 | 2 958 |
| Central African Republic | 24 | 78 | 105 | 4 | 13 | 18 | 3.8 | 4.9 | 585 |
| Chad | ... | 46 | 72 | ... | 5 | 7 | 1.5 | 1.4 | 964 |
| Congo | 54 | 101 | 103 | 11 | 21 | 22 | 5.8 | 5.7 | 470 |
| Democratic Republic of the Congo | 286 | 315 | 538 | 3 | 3 | 6 | 1.1 | 1.8 | 9 400 |
| Equatorial Guinea | ... | ... | 80 | ... | ... | 21 | ... | 24.6 | 382 |
| Gabon | 75 | 75 | 119 | 6 | 6 | 10 | 10.2 | 15.8 | 1 224 |
| Sao Tome and Principe | 32 | 40 | 41 | 70 | 87 | 89 | 50.9 | 51.1 | 46 |
| Central Africa ^a | 1 923 | 2 944 | 3 640 | 11 | 17 | 21 | 5.1 | 5.8 | 17 492 |
| Botswana | 634 | 643 | 666 | 95 | 97 | 100 | 61.7 | 62.7 | 666 |
| Comoros | 4 | 13 | 14 | 12 | 39 | 42 | 3.8 | 4.0 | 33 |
| Eritrea | 109 | 130 | 135 | 30 | 35 | 37 | 5.3 | ... | 369 |
| Ethiopia | 1 005 | 1 469 | 1 823 | 51 | 74 | 92 | 3.9 | 4.7 | 1 988 |
| Kenya | ... | 2 329 | 4 115 | 0 | 34 | 61 | 12.4 | 21.3 | 6 761 |
| Lesotho | 163 | 204 | 239 | 75 | 94 | 111 | 20.6 | 23.8 | 216 |
| Madagascar | 630 | 757 | 816 | 19 | 22 | 24 | 8.4 | 8.8 | 3 390 |
| Malawi | 504 | 677 | 728 | 78 | 104 | 112 | 8.7 | 10.7 | 650 |
| Mauritius | ... | ... | 193 | ... | ... | 60 | ... | 27.1 | 321 |
| Mozambique | 359 | 359 | 356 | 28 | 28 | 28 | 3.5 | 3.4 | 1 274 |
| Namibia | 253 | 306 | 264 | 65 | 78 | 67 | 27.9 | 23.4 | 392 |
| Rwanda | 312 | 341 | 395 | 60 | 66 | 76 | 7.1 | 8.0 | 517 |
| Seychelles | ... | 27 | 20 | ... | 100 | 74 | 58.6 | 58.3 | 27 |
| South Africa | ... | ... | 4 326 | ... | ... | 98 | ... | 15.8 | 4 406 |
| Swaziland | 110 | 170 | 170 | 49 | 76 | 76 | 29.2 | 28.5 | 223 |
| Uganda | 554 | 630 | 1 215 | 45 | 51 | 99 | 5.9 | 8.5 | 1 229 |
| United Republic of Tanzania | 1 035 | 1 677 | 2 134 | 17 | 27 | 34 | 8.6 | 10.6 | 6 216 |
| Zambia | ... | 1 563 | 1 563 | ... | 100 | 100 | 27.8 | 27.0 | 1 563 |
| Zimbabwe | 791 | 1 560 | 1 560 | 48 | 95 | 95 | 25.3 | 25.0 | 1 643 |
| Eastern and Southern Africa ^a | 6 151 | 8 595 | 10 120 | 34 | 47 | 55 | 9.5 | 11.5 | 18 289 |
| Algeria | 54 | 60 | ... | 7 | 8 | ... | 0.3 | ... | 775 |
| Benin | 183 | 105 | 126 | 22 | 13 | 15 | 2.6 | 3.0 | 825 |
| Burkina Faso | 454 | 815 | 1 267 | 23 | 42 | 65 | 11.5 | 17.4 | 1 957 |
| Cape Verde | 32 | 32 | 205 | 16 | 16 | 100 | 12.2 | 76.5 | 205 |
| Côte d'Ivoire | 124 | 1 070 | ... | 4 | 36 | ... | 4.7 | 5.5 | 2 933 |
| Gambia | 26 | 32 | 34 | 30 | 37 | 39 | 4.1 | 4.2 | 87 |
| Ghana | 422 | 524 | 808 | 14 | 17 | 27 | 4.5 | 6.7 | 3 011 |
| Guinea | ... | 69 | 83 | ... | 7 | 8 | 1.5 | 1.8 | 1 031 |
| Guinea-Bissau | 34 | 45 | 62 | 23 | 30 | 41 | 6.3 | 8.4 | 151 |
| Liberia | 74 | 90 | 114 | 17 | 21 | 26 | 5.0 | 6.1 | 437 |
| Mali | 58 | 260 | 1 091 | 5 | 21 | 89 | 4.3 | 17.6 | 1 219 |
| Mauritania | 22 | 17 | ... | 4 | 3 | ... | 1.0 | ... | 607 |
| Niger | 145 | 172 | 321 | 4 | 5 | 10 | 2.8 | 5.0 | 3 355 |
| Nigeria | 736 | 897 | 1 074 | 3 | 4 | 5 | 1.3 | 1.5 | 23 640 |
| Senegal | 190 | 138 | 532 | 54 | 39 | 152 | 2.4 | 8.8 | 350 |
| Sierra Leone | 165 | 370 | 416 | 16 | 35 | 40 | 13.8 | 15.2 | 1 050 |
| Togo | 51 | 106 | 225 | 6 | 11 | 24 | 3.3 | 6.9 | 924 |
| Western Africa ^a | 2 570 | 3 586 | 6 275 | 7 | 10 | 17 | 3.0 | 5.0 | 37 211 |
| African Region ^a | 10 644 | 15 125 | 20 035 | 15 | 21 | 27 | 6.1 | 7.9 | 72 992 |

a Total calculated only for countries that reported for all three years.

Annex 2. Co-trimoxazole prophylaxis for infants exposed to HIV by country and subregion, WHO African Region, 2007–2009

| Country and subregion | Infants born to women living with HIV receiving co-trimoxazole prophylaxis within two months of birth | | | | | |
|----------------------------------|---|------------------------|-----------------|------------------------|-----------------|------------------------|
| | 2007 | | 2008 | | 2009 | |
| | Reported number | Estimated coverage (%) | Reported number | Estimated coverage (%) | Reported number | Estimated coverage (%) |
| Angola | ... | ... | ... | ... | 2 435 | 15 |
| Burundi | 814 | 10 | 1 046 | 7 | 1 332 | 9 |
| Cameroon | 1 030 | 3 | 8 315 | 23 | 8 378 | 25 |
| Central African Republic | 443 | 4 | 741 | 9 | 887 | 14 |
| Chad | 63 | 0 | 63 | <1 | 676 | 4 |
| Congo | 462 | 10 | ... | ... | 548 | 15 |
| Democratic Republic of the Congo | 170 | 0 | 83 | 0 | 396 | 1 |
| Gabon | 58 | 2 | 219 | 12 | 219 | 12 |
| Sao Tome and Principe | 3 | ... | 11 | ... | 17 | ... |
| Central Africa | 3 043 | 3 | 10 478 | 9 | 14 888 | 13 |
| Botswana | 9 489 | 83 | 7 485 | 60 | 8 232 | 65 |
| Comoros | 0 | 0 | 0 | 0 | 1 | 17 |
| Eritrea | 150 | 6 | 225 | 15 | 225 | 17 |
| Ethiopia | 388 | 1 | 895 | 2 | 1 076 | 3 |
| Kenya | 4 534 | 6 | 2 091 | 2 | 4 043 | 5 |
| Lesotho | ... | ... | 1 542 | 11 | 1 542 | 11 |
| Madagascar | 2 | 0 | ... | ... | ... | ... |
| Malawi | 8 803 | 12 | 21 841 | 37 | 28 079 | 49 |
| Mauritius | ... | ... | ... | ... | 48 | 66 |
| Rwanda | ... | ... | 5 347 | 53 | 7 222 | 67 |
| Seychelles | ... | ... | 3 | ... | 7 | ... |
| South Africa | ... | ... | ... | ... | 43 394 | 20 |
| Swaziland | 725 | 6 | 8 238 | 85 | 9 189 | >95 |
| United Republic of Tanzania | ... | ... | ... | ... | 8 348 | 10 |
| Zambia | 11 884 | 16 | 19 040 | 27 | 25 139 | 37 |
| Zimbabwe | 9 975 | 19 | 9 816 | 19 | 13 852 | 28 |
| Eastern and Southern Africa | 45 950 | 6 | 76 523 | 19 | 150 397 | 20 |
| Benin | 984 | 22 | 1 314 | 36 | 1 473 | 39 |
| Burkina Faso | ... | ... | 462 | 7 | 1 815 | 28 |
| Cape Verde | 31 | ... | 54 | ... | 67 | ... |
| Gambia | ... | ... | 393 | 38 | 99 | 8 |
| Guinea | 334 | 5 | 869 | 16 | 801 | 17 |
| Liberia | 112 | 4 | 112 | 4 | 45 | 2 |
| Mali | 195 | 2 | 4 507 | >95 | 722 | 17 |
| Mauritania | 18 | 4 | 18 | 4 | 18 | 5 |
| Niger | ... | ... | 201 | 5 | 309 | 6 |
| Nigeria | ... | ... | 5 650 | 3 | 3 927 | 2 |
| Sierra Leone | 66 | 2 | 363 | 11 | 363 | 11 |
| Togo | 488 | 6 | 737 | 12 | 945 | 17 |
| Western Africa | 2 228 | 4 | 14 680 | 9 | 10 584 | 11 |
| African Region | 51 221 | 5 | 101 681 | 11 | 175 869 | 15 |

Annex 3. Access of people with TB to HIV-related services by country and subregion, WHO African Region, 2005 and 2009

| Country and subregion | Number of people with TB with a recorded HIV test | | Number of people living with HIV and TB receiving co-trimoxazole prophylaxis | | Number of people living with HIV and TB receiving antiretroviral therapy | |
|----------------------------------|---|---------|--|---------|--|---------|
| | 2005 | 2009 | 2005 | 2009 | 2005 | 2009 |
| Angola | ... | 2 023 | ... | 42 | ... | 29 |
| Burundi | ... | 2 857 | ... | 617 | ... | 423 |
| Cameroon | 0 | 18 677 | ... | 0 | ... | 0 |
| Central African Republic | ... | 3 749 | ... | 808 | ... | 427 |
| Chad | ... | ... | ... | ... | ... | ... |
| Congo | ... | 205 | ... | 99 | ... | 99 |
| Democratic Republic of the Congo | 1 885 | 20 630 | 284 | 1 435 | 3 | 656 |
| Equatorial Guinea | ... | 331 | ... | 17 | ... | 66 |
| Sao Tome and Principe | 152 | 79 | 0 | 10 | 0 | 3 |
| Central Africa | 2 037 | 48 551 | 284 | 3 028 | 3 | 1 703 |
| Botswana | 2 291 | 6 027 | ... | 1 379 | ... | 1 379 |
| Comoros | 112 | 117 | 2 | 0 | 2 | 0 |
| Eritrea | ... | ... | ... | ... | ... | ... |
| Ethiopia | 3 211 | 56 040 | 1 166 | 7 516 | 388 | 4 515 |
| Kenya | 15 658 | 96 676 | 3 940 | 38 989 | 1 546 | 14 250 |
| Lesotho | 156 | 10 563 | 100 | 7 636 | ... | 2 235 |
| Madagascar | 1 759 | ... | ... | ... | ... | ... |
| Malawi | 12 243 | 21 041 | 7 747 | 12 723 | 4 156 | 6 154 |
| Mauritius | 115 | 110 | 2 | 7 | 1 | 5 |
| Mozambique | ... | 38 087 | ... | 22 183 | ... | 5 622 |
| Namibia | 2 547 | 9 849 | ... | 4 434 | ... | 1 995 |
| Rwanda | 5 003 | 7 448 | 349 | 2 329 | 292 | 1 239 |
| Seychelles | ... | 15 | 2 | 3 | 2 | 2 |
| South Africa | 67 988 | 197 448 | 35 299 | 80 954 | 11 654 | 48 314 |
| Swaziland | ... | 10 599 | ... | 8 386 | ... | 2 315 |
| Uganda | 10 555 | 31 695 | 1 889 | 14 731 | 762 | 3 766 |
| United Republic of Tanzania | 1 613 | 56 388 | 514 | 19 076 | 188 | 6 684 |
| Zambia | 1 082 | 34 992 | ... | 15 041 | 418 | 10 009 |
| Zimbabwe | 0 | 28 006 | 0 | ... | 0 | ... |
| Eastern and Southern Africa | 124 333 | 605 101 | 51 010 | 235 387 | 19 409 | 108 484 |
| Algeria | ... | ... | ... | ... | ... | ... |
| Benin | 796 | 3 845 | ... | ... | ... | ... |
| Burkina Faso | 1 213 | 4 817 | 379 | 959 | 181 | 503 |
| Cape Verde | 298 | 282 | ... | ... | 14 | ... |
| Côte d'Ivoire | 4 079 | 17 253 | 590 | 3 674 | 216 | 1 633 |
| Gabon | 185 | 1 130 | 185 | 348 | ... | 348 |
| Gambia | ... | 2 045 | ... | ... | ... | 35 |
| Ghana | 844 | 9 870 | 340 | 1 601 | 125 | 531 |
| Guinea | ... | 5 444 | ... | 520 | ... | 84 |
| Guinea-Bissau | 200 | 664 | 110 | ... | 33 | ... |
| Liberia | 114 | 5 964 | 0 | 30 | ... | 35 |
| Mali | ... | 3 760 | ... | 263 | ... | 61 |
| Mauritania | 10 | 199 | 0 | ... | 0 | ... |
| Niger | ... | 2 424 | 65 | ... | 52 | ... |
| Nigeria | 6 897 | 70 693 | ... | 8 761 | ... | 7 026 |
| Senegal | ... | 6 906 | ... | 386 | ... | 123 |
| Sierra Leone | ... | 8 625 | ... | ... | ... | ... |
| Togo | 0 | 1 429 | 0 | ... | ... | 94 |
| Western Africa | 14 636 | 145 350 | 1 669 | 16 542 | 621 | 10 473 |
| African Region | 141 006 | 799 002 | 52 963 | 254 957 | 20 033 | 120 660 |

Source: Global tuberculosis control 2010 report. Geneva, World Health Organization, 2010 http://www.who.int/tb/publication/global_report/2010/en/index.html, accessed 13 May 2010.

Annex 4. Number of antiretroviral therapy sites by country, subregion and year, WHO African Region, 2005–2009

| Country and subregion | Number of antiretroviral therapy sites | | | | | % increase in antiretroviral therapy sites |
|----------------------------------|--|-------|-------|-------|-------|--|
| | 2005 | 2006 | 2007 | 2008 | 2009 | (2008-2009) |
| Angola | 6 | ... | 56 | 86 | 160 | 86.0 |
| Burundi | 25 | 38 | 43 | 68 | 75 | 10.3 |
| Cameroon | 89 | 91 | 109 | 132 | 140 | 6.1 |
| Central African Republic | 23 | 29 | 46 | 62 | 91 | 46.8 |
| Chad | ... | ... | ... | 64 | 64 | 0.0 |
| Congo | ... | ... | 28 | 45 | 45 | 0.0 |
| Democratic Republic of the Congo | 70 | 147 | 209 | 254 | 303 | 19.3 |
| Equatorial Guinea | ... | ... | ... | ... | ... | ... |
| Gabon | ... | ... | 12 | 15 | 16 | 6.7 |
| Sao Tome and Principe | ... | 1 | 7 | 7 | 8 | 14.3 |
| Central Africa | 213 | 306 | 510 | 733 | 902 | 23.1 |
| Botswana | 32 | 32 | 99 | 128 | 176 | 37.5 |
| Comoros | ... | ... | ... | 1 | 1 | 0.0 |
| Eritrea | ... | ... | 14 | 14 | 17 | 21.4 |
| Ethiopia | 73 | 73 | 272 | 420 | 511 | 21.7 |
| Kenya | 250 | 322 | 322 | 731 | 943 | 29.0 |
| Lesotho | 22 | 22 | 110 | 148 | 189 | 27.7 |
| Madagascar | ... | ... | 18 | 31 | 47 | 51.6 |
| Malawi | 60 | 141 | 154 | 221 | 377 | 70.6 |
| Mauritius | ... | ... | ... | ... | 3 | ... |
| Mozambique | 32 | 32 | 211 | 213 | 220 | 3.3 |
| Namibia | 29 | 34 | 57 | 62 | 141 | 127.4 |
| Rwanda | 76 | ... | 161 | 195 | 269 | 37.9 |
| Seychelles | ... | ... | ... | 19 | 19 | 0.0 |
| South Africa | 183 | 183 | 183 | 183 | 1 286 | 602.7 |
| Swaziland | 17 | 19 | 22 | 70 | 89 | 27.1 |
| Uganda | 175 | 175 | 286 | 336 | 370 | 10.1 |
| United Republic of Tanzania | 96 | 96 | 204 | 552 | 712 | 29.0 |
| Zambia | 110 | 218 | 322 | 332 | 447 | 34.6 |
| Zimbabwe | 48 | 69 | 89 | 282 | 337 | 19.5 |
| Eastern and Southern Africa | 1 203 | 1 416 | 2 524 | 3 938 | 6 154 | 56.3 |
| Algeria | ... | ... | 100 | 8 | ... | ... |
| Benin | ... | 44 | 47 | 61 | 67 | 9.8 |
| Burkina Faso | 44 | 62 | 76 | 79 | 82 | 3.8 |
| Cape Verde | ... | ... | 27 | 32 | 32 | 0.0 |
| Côte d'Ivoire | 79 | 103 | 104 | 365 | 365 | 0.0 |
| Gambia | ... | ... | 8 | 9 | 9 | 0.0 |
| Ghana | 5 | 46 | 92 | 117 | 133 | 13.7 |
| Guinea | 8 | 13 | ... | 34 | 46 | 35.3 |
| Guinea-Bissau | ... | ... | 12 | 22 | 26 | 18.2 |
| Liberia | ... | 12 | 12 | 19 | 22 | 15.8 |
| Mali | ... | ... | 45 | 63 | 68 | 7.9 |
| Mauritania | ... | ... | 4 | ... | ... | ... |
| Niger | ... | 11 | 12 | 13 | 16 | 23.1 |
| Nigeria | 71 | ... | 215 | 296 | 393 | 32.8 |
| Senegal | 32 | ... | 68 | 77 | 101 | 31.2 |
| Sierra Leone | 16 | 55 | 81 | 109 | 116 | 6.4 |
| Togo | ... | 68 | 105 | 70 | 115 | 64.3 |
| Western Africa | 255 | 414 | 1 008 | 1 374 | 1 591 | 16.0 |
| African Region | 1 671 | 2 136 | 4 042 | 6 045 | 8 278 | 36.9 |

Annex 5. Number of people receiving antiretroviral therapy, estimated number in need of antiretroviral therapy and estimated antiretroviral therapy coverage by country, subregion and year, WHO African Region, 2005–2009

| Country and subregion | 2005 | | | | | 2006 | | | | | 2007 | | | | | 2008 | | | | | 2009 | | | | |
|----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|
| | Number of people receiving antiretroviral therapy | Estimated number of people needing antiretroviral therapy | Estimated antiretroviral therapy coverage (%) | Number of people receiving antiretroviral therapy | Estimated number of people needing antiretroviral therapy | Estimated antiretroviral therapy coverage (%) | Number of people receiving antiretroviral therapy | Estimated number of people needing antiretroviral therapy | Estimated antiretroviral therapy coverage (%) | Number of people receiving antiretroviral therapy | Estimated number of people needing antiretroviral therapy | Estimated antiretroviral therapy coverage (%) | Number of people receiving antiretroviral therapy | Estimated number of people needing antiretroviral therapy | Estimated antiretroviral therapy coverage (%) | Number of people receiving antiretroviral therapy | Estimated number of people needing antiretroviral therapy | Estimated antiretroviral therapy coverage (%) | Number of people receiving antiretroviral therapy | Estimated number of people needing antiretroviral therapy | Estimated antiretroviral therapy coverage (%) | Number of people receiving antiretroviral therapy | Estimated number of people needing antiretroviral therapy | Estimated antiretroviral therapy coverage (%) | |
| Angola | 3 000 | 69 005 | 4 | 6 514 | 72 030 | 9 | 11 540 | 77 505 | 15 | 14 139 | 81 404 | 17 | 20 640 | 85 886 | 24 | | | | | | | | | | |
| Burundi | 6 416 | 85 522 | 8 | 8 048 | 86 851 | 9 | 10 894 | 90 219 | 12 | 14 343 | 90 781 | 16 | 17 661 | 90 812 | 19 | | | | | | | | | | |
| Cameroon | 23 820 | 227 875 | 10 | 28 403 | 237 679 | 12 | 45 817 | 252 483 | 18 | 59 960 | 261 250 | 23 | 76 228 | 270 331 | 28 | | | | | | | | | | |
| Central African Republic | 1 647 | 84 291 | 2 | 2 782 | 82 101 | 3 | 9 591 | 80 334 | 12 | 10 551 | 77 331 | 14 | 14 474 | 74 265 | 19 | | | | | | | | | | |
| Chad | 5 275 | 69 945 | 8 | 5 500 | 74 792 | 7 | 7 400 | 81 976 | 9 | 17 900 | 86 137 | 21 | 32 288 | 90 120 | 36 | | | | | | | | | | |
| Congo | 2 967 | 32 182 | 9 | 3 186 | 32 462 | 10 | 4 956 | 33 548 | 15 | 9 400 | 34 166 | 28 | 7 998 | 34 926 | 23 | | | | | | | | | | |
| Democratic Republic of the Congo | 7 721 | 167 702 | 5 | 17 561 | 173 600 | 10 | 28 925 | 186 039 | 16 | 24 645 | 193 559 | 13 | 34 967 | 202 257 | 17 | | | | | | | | | | |
| Equatorial Guinea | 5 | 3 251 | 0 | 414 | 3 967 | 10 | 985 | 4 926 | 20 | 839 | 5 764 | 15 | 1 645 | 6 621 | 25 | | | | | | | | | | |
| Gabon | 2 000 | 17 109 | 12 | 5 278 | 18 113 | 29 | 6 373 | 19 349 | 33 | 7 773 | 20 241 | 38 | 9 976 | 21 065 | 47 | | | | | | | | | | |
| Sao Tome and Principe | ... | ... | ... | 51 | ... | ... | 74 | ... | ... | 109 | ... | ... | 169 | ... | ... | | | | | | | | | | |
| Central Africa | 52 851 | 756 882 | 7 | 77 737 | 781 595 | 10 | 126 555 | 826 379 | 15 | 159 659 | 850 633 | 19 | 216 046 | 876 283 | 25 | | | | | | | | | | |
| Botswana | 59 946 | 134 286 | 45 | 79 490 | 142 803 | 56 | 92 932 | 153 174 | 61 | 117 045 | 163 618 | 72 | 145 190 | 174 077 | 83 | | | | | | | | | | |
| Comoros | 200 | 40 | 500 | 5 | 45 | 11 | 7 | 52 | 13 | 8 | 60 | 13 | 12 | 68 | 18 | | | | | | | | | | |
| Eritrea | 563 | 12 786 | 4 | 1 175 | 13 094 | 9 | 1 301 | 13 482 | 10 | 4 299 | 13 528 | 32 | 4 955 | 13 516 | 37 | | | | | | | | | | |
| Ethiopia | 20 477 | 364 935 | 6 | 53 720 | 358 930 | 15 | 90 212 | 357 072 | 25 | 132 379 | 347 362 | 38 | 176 632 | 338 434 | 52 | | | | | | | | | | |
| Kenya | 65 773 | 710 866 | 9 | 125 026 | 702 278 | 18 | 177 000 | 707 432 | 25 | 250 576 | 703 467 | 36 | 336 980 | 705 951 | 48 | | | | | | | | | | |
| Lesotho | 8 400 | 112 329 | 7 | 17 667 | 116 441 | 15 | 21 710 | 121 986 | 18 | 45 262 | 125 380 | 36 | 61 736 | 128 769 | 48 | | | | | | | | | | |
| Madagascar | 6 | 8 539 | 0 | 92 | 8 869 | 1 | 138 | 9 317 | 1 | 162 | 9 655 | 2 | 214 | 10 037 | 2 | | | | | | | | | | |
| Malawi | 29 087 | 409 954 | 7 | 59 980 | 413 006 | 15 | 100 649 | 424 591 | 24 | 147 497 | 427 652 | 34 | 198 846 | 435 022 | 46 | | | | | | | | | | |
| Mauritius | 120 | 1 622 | 7 | 243 | 1 904 | 13 | 321 | 2 221 | 14 | 491 | 2 550 | 19 | 652 | 2 900 | 22 | | | | | | | | | | |
| Mozambique | 19 854 | 418 380 | 5 | 40 891 | 457 674 | 9 | 89 592 | 506 241 | 18 | 128 330 | 541 523 | 24 | 170 198 | 573 874 | 30 | | | | | | | | | | |
| Namibia | 29 200 | 75 611 | 39 | 35 593 | 80 469 | 44 | 52 316 | 85 699 | 61 | 59 376 | 89 430 | 66 | 70 498 | 93 371 | 76 | | | | | | | | | | |
| Rwanda | 19 289 | 79 309 | 24 | 34 636 | 78 981 | 44 | 48 569 | 80 628 | 60 | 63 149 | 83 155 | 76 | 76 726 | 87 519 | 88 | | | | | | | | | | |
| Seychelles | 43 | ... | ... | 82 | ... | ... | 94 | ... | ... | 113 | ... | ... | 139 | ... | ... | | | | | | | | | | |
| South Africa | 206 718 | 2 164 607 | 10 | 324 754 | 2 308 465 | 14 | 458 951 | 2 455 199 | 19 | 730 183 | 2 549 628 | 29 | 971 556 | 2 632 591 | 37 | | | | | | | | | | |
| Swaziland | 13 006 | 61 669 | 21 | 18 493 | 65 842 | 28 | 24 535 | 70 917 | 35 | 32 701 | 75 164 | 44 | 47 241 | 79 957 | 59 | | | | | | | | | | |
| Uganda | 74 869 | 467 637 | 16 | 96 294 | 470 101 | 20 | 115 348 | 490 505 | 24 | 163 718 | 501 593 | 31 | 200 413 | 516 345 | 39 | | | | | | | | | | |
| United Republic of Tanzania | 21 543 | 645 186 | 3 | 60 342 | 646 811 | 9 | 135 696 | 659 976 | 21 | 154 468 | 655 528 | 24 | 199 413 | 658 843 | 30 | | | | | | | | | | |
| Zambia | 48 585 | 389 382 | 12 | 82 030 | 396 915 | 21 | 151 199 | 417 793 | 36 | 219 576 | 428 695 | 51 | 283 863 | 443 385 | 64 | | | | | | | | | | |
| Zimbabwe | 24 500 | 733 974 | 3 | 66 920 | 709 680 | 9 | 97 692 | 691 891 | 14 | 148 144 | 664 906 | 22 | 218 589 | 644 049 | 34 | | | | | | | | | | |
| Eastern and Southern Africa | 642 179 | 6 791 112 | 9 | 1 097 433 | 6 972 308 | 16 | 1 658 262 | 7 248 176 | 23 | 2 387 477 | 7 382 894 | 32 | 3 163 853 | 7 538 708 | 42 | | | | | | | | | | |

| Country and subregion | 2005 | | | | | | 2006 | | | | | | 2007 | | | | | | 2008 | | | | | | 2009 | | | | | |
|-----------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|--|--|
| | Number of people receiving antiretroviral therapy | Estimated number of people needing antiretroviral therapy | Estimated antiretroviral therapy coverage (%) | Number of people receiving antiretroviral therapy | Estimated number of people needing antiretroviral therapy | Estimated antiretroviral therapy coverage (%) | Number of people receiving antiretroviral therapy | Estimated number of people needing antiretroviral therapy | Estimated antiretroviral therapy coverage (%) | Number of people receiving antiretroviral therapy | Estimated number of people needing antiretroviral therapy | Estimated antiretroviral therapy coverage (%) | Number of people receiving antiretroviral therapy | Estimated number of people needing antiretroviral therapy | Estimated antiretroviral therapy coverage (%) | Number of people receiving antiretroviral therapy | Estimated number of people needing antiretroviral therapy | Estimated antiretroviral therapy coverage (%) | Number of people receiving antiretroviral therapy | Estimated number of people needing antiretroviral therapy | Estimated antiretroviral therapy coverage (%) | Number of people receiving antiretroviral therapy | Estimated number of people needing antiretroviral therapy | Estimated antiretroviral therapy coverage (%) | Number of people receiving antiretroviral therapy | Estimated number of people needing antiretroviral therapy | Estimated antiretroviral therapy coverage (%) | | | |
| Algeria | 424 | 3 455 | 12 | 588 | 4 042 | 15 | 993 | 4 699 | 21 | 1 111 | 5 339 | 21 | 1 526 | 6 046 | 25 | 1 526 | 6 046 | 25 | 1 526 | 6 046 | 25 | 1 526 | 6 046 | 25 | 1 526 | 6 046 | 25 | | | |
| Benin | 4 673 | 24 597 | 19 | 7 634 | 25 528 | 30 | 9 765 | 26 910 | 36 | 12 078 | 27 732 | 44 | 15 401 | 28 822 | 53 | 15 401 | 28 822 | 53 | 15 401 | 28 822 | 53 | 15 401 | 28 822 | 53 | 15 401 | 28 822 | 53 | | | |
| Burkina Faso | 8 214 | 66 949 | 12 | 14 079 | 63 870 | 22 | 16 938 | 62 192 | 27 | 21 103 | 59 963 | 35 | 26 448 | 57 948 | 46 | 26 448 | 57 948 | 46 | 26 448 | 57 948 | 46 | 26 448 | 57 948 | 46 | 26 448 | 57 948 | 46 | | | |
| Cape Verde | 215 | ... | ... | 223 | ... | ... | 291 | ... | ... | 360 | ... | ... | 611 | ... | ... | 611 | ... | ... | 611 | ... | ... | 611 | ... | ... | 611 | ... | ... | | | |
| Côte d'Ivoire | 18 533 | 290 728 | 6 | 36 348 | 284 167 | 13 | 38 221 | 279 989 | 14 | 51 820 | 270 374 | 19 | 72 011 | 260 298 | 28 | 72 011 | 260 298 | 28 | 72 011 | 260 298 | 28 | 72 011 | 260 298 | 28 | 72 011 | 260 298 | 28 | | | |
| Gambia | 150 | 2 357 | 6 | 400 | 2 826 | 14 | 431 | 3 530 | 12 | 770 | 4 208 | 18 | 921 | 4 996 | 18 | 921 | 4 996 | 18 | 921 | 4 996 | 18 | 921 | 4 996 | 18 | 921 | 4 996 | 18 | | | |
| Ghana | 4 328 | 117 827 | 4 | 9 882 | 120 265 | 8 | 12 315 | 123 886 | 10 | 21 548 | 124 801 | 17 | 30 265 | 126 167 | 24 | 30 265 | 126 167 | 24 | 30 265 | 126 167 | 24 | 30 265 | 126 167 | 24 | 30 265 | 126 167 | 24 | | | |
| Guinea | 2 101 | 36 022 | 6 | 4 699 | 36 004 | 13 | 5 660 | 36 693 | 15 | 9 212 | 36 988 | 25 | 14 999 | 37 577 | 40 | 14 999 | 37 577 | 40 | 14 999 | 37 577 | 40 | 14 999 | 37 577 | 40 | 14 999 | 37 577 | 40 | | | |
| Guinea-Bissau | 62 | 6 778 | 1 | 349 | 7 378 | 5 | 890 | 8 146 | 11 | 1 832 | 8 610 | 21 | 2 764 | 9 103 | 30 | 2 764 | 9 103 | 30 | 2 764 | 9 103 | 30 | 2 764 | 9 103 | 30 | 2 764 | 9 103 | 30 | | | |
| Liberia | 397 | 23 474 | 2 | 796 | 23 176 | 3 | 1 414 | 23 221 | 6 | 2 017 | 22 578 | 9 | 2 970 | 21 776 | 14 | 2 970 | 21 776 | 14 | 2 970 | 21 776 | 14 | 2 970 | 21 776 | 14 | 2 970 | 21 776 | 14 | | | |
| Mali | 7 038 | 42 116 | 17 | 11 651 | 42 308 | 28 | 12 398 | 42 853 | 29 | 16 475 | 42 395 | 39 | 21 100 | 41 987 | 50 | 21 100 | 41 987 | 50 | 21 100 | 41 987 | 50 | 21 100 | 41 987 | 50 | 21 100 | 41 987 | 50 | | | |
| Mauritania | ... | 4 340 | ... | 256 | 4 685 | 5 | 839 | 5 076 | 17 | 1 072 | 5 396 | 20 | 1 401 | 5 705 | 25 | 1 401 | 5 705 | 25 | 1 401 | 5 705 | 25 | 1 401 | 5 705 | 25 | 1 401 | 5 705 | 25 | | | |
| Niger | 609 | 25 255 | 2 | 1 168 | 26 145 | 4 | 1 536 | 27 678 | 6 | 2 846 | 28 177 | 10 | 6 445 | 28 659 | 22 | 6 445 | 28 659 | 22 | 6 445 | 28 659 | 22 | 6 445 | 28 659 | 22 | 6 445 | 28 659 | 22 | | | |
| Nigeria | 41 224 | 1 287 441 | 3 | 95 008 | 1 314 545 | 7 | 197 694 | 1 376 403 | 14 | 238 659 | 1 408 448 | 17 | 302 973 | 1 442 929 | 21 | 302 973 | 1 442 929 | 21 | 302 973 | 1 442 929 | 21 | 302 973 | 1 442 929 | 21 | 302 973 | 1 442 929 | 21 | | | |
| Senegal | 4 200 | 16 039 | 26 | 5 500 | 17 709 | 31 | 6 699 | 20 091 | 33 | 9 252 | 21 966 | 42 | 12 249 | 23 810 | 51 | 12 249 | 23 810 | 51 | 12 249 | 23 810 | 51 | 12 249 | 23 810 | 51 | 12 249 | 23 810 | 51 | | | |
| Sierra Leone | 210 | 12 565 | 2 | 1 416 | 14 458 | 10 | 2 649 | 16 683 | 16 | 1 950 | 18 312 | 11 | 3 660 | 19 880 | 18 | 3 660 | 19 880 | 18 | 3 660 | 19 880 | 18 | 3 660 | 19 880 | 18 | 3 660 | 19 880 | 18 | | | |
| Togo | 6 545 | 49 875 | 13 | 6 993 | 52 079 | 13 | 7 980 | 54 853 | 15 | 11 211 | 56 572 | 20 | 16 710 | 58 222 | 29 | 16 710 | 58 222 | 29 | 16 710 | 58 222 | 29 | 16 710 | 58 222 | 29 | 16 710 | 58 222 | 29 | | | |
| Western Africa | 98 923 | 2 009 818 | 5 | 196 990 | 2 039 185 | 10 | 316 713 | 2 112 903 | 15 | 403 316 | 2 141 859 | 19 | 532 454 | 2 173 925 | 24 | 532 454 | 2 173 925 | 24 | 532 454 | 2 173 925 | 24 | 532 454 | 2 173 925 | 24 | 532 454 | 2 173 925 | 24 | | | |
| African Region | 793 953 | 9 557 812 | 8 | 1 372 160 | 9 793 088 | 14 | 2 101 530 | 10 187 458 | 21 | 2 950 452 | 10 375 386 | 28 | 3 912 353 | 10 588 916 | 37 | 3 912 353 | 10 588 916 | 37 | 3 912 353 | 10 588 916 | 37 | 3 912 353 | 10 588 916 | 37 | 3 912 353 | 10 588 916 | 37 | | | |



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