5. SCALING UP HIV SERVICES FOR WOMEN AND CHILDREN

Key findings

- Global and national political commitment to scale up interventions for preventing mother-to-child transmission of HIV has intensified in recent years.
- An estimated 18% of pregnant women in low- and middle-income countries received an HIV test in 2007 versus 10% in 2004.
- An estimated 33% of pregnant women living with HIV received antiretrovirals to prevent transmission to their children in 2007, a substantial increase compared with only 10% in 2004. The most significant expansion was in sub-Saharan Africa.
- An increasing number of countries are providing combination antiretroviral prophylactic drug regimens to pregnant women living with HIV, which are more effective in reducing the mother-to-child transmission of HIV than one drug alone.
- Only 12% of pregnant women identified as being HIV-positive during antenatal care were assessed to determine whether they were eligible to receive antiretroviral therapy for their own health.
- Only 8% of infants born to pregnant women with HIV in 2007 were tested for HIV within the first two months of birth. In addition, only 4% of infants born to women living with HIV initiated co-trimoxazole prophylaxis as indicated in WHO guidelines.
- The number of children receiving antiretroviral therapy increased from about 75 000 in 2005 to almost 200 000 in 2007. However, many children living with HIV are still not receiving treatment, and mortality among them remains high.

The HIV epidemic is taking a heavy toll on women and children worldwide, especially in sub-Saharan Africa. In 2007, women accounted for approximately half of all people living with HIV worldwide and for more than 60% of all infections in sub-Saharan Africa. In other regions, women still represent less than half of all people with HIV (26% in Eastern Europe and Central Asia, 29% in Asia, 43% in the Caribbean), but their proportion continues to grow *(1)*.

An estimated 2.1 million [1.9 million to 2.4 million] children younger than 15 years were living with HIV in 2007, and more than 90% of them were infected through mother-to-child transmission *(1)*. Children account for 6% of all HIV infections, 17% of new infections and 14% of all HIV-related mortality. About 90% of children living with HIV are in sub-Saharan Africa.

An estimated 1.5 million of the 115 million births per year in low- and middle-income countries are from mothers living with HIV. Close to 90% of all pregnant women living with HIV in low- and middle-income countries live in 20 countries, and 75% are concentrated in 12 countries (Table 5.1).

HIV is also adversely affecting the overall health of children, especially in countries with a high HIV burden. HIV has been the leading cause of death among children younger than five years of age in six countries, all in eastern and southern Africa (Table 5.2).

Without any intervention, between 15% and 45% of infants born to mothers living with HIV will become infected (5–10% during pregnancy, 10–20% during labour and delivery and 5–20% through breastfeeding) *(3)*.

Table 5.1. Countries with the largest estimated numbers of pregnant women living with HIV and percentage of the total number of pregnant women living with HIV in low- and middle-income countries, 2007

Rank	Country	Estimated number of pregnant women living with HIV	% of the total in low- and middle-income countries
1	South Africa	220 000 [180 000–260 000]	15%
2	Nigeria	190 000 [130 000–240 000]	13%
3	United Republic of Tanzania	100 000 [91 000–110 000]	7%
4	Mozambique	97 000 [81 000–120 000]	7%
5	Uganda	78 000 [68 000–92 000]	5%
6	Kenya	76 000 [66 000–86 000]	5%
7	Zambia	76 000 [68 000–86 000]	5%
8	Malawi	73 000 [64 000–82 000]	5%
9	Ethiopia	66 000 [58 000–74 000]	4%
10	India	64 000 [37 000–92 000]	4%
11	Zimbabwe	52 000 [48 000–57 000]	4%
12	Democratic Republic of the Congo	38 000 [33 000–46 000]	3%
13	Cameroon	34 000 [22 000–42 000]	2%
14	Côte d'Ivoire	28 000 [21 000–34 000]	2%
15	Sudan	18 000 [12 000–26 000]	1%
16	Angola	18 000 [13 000–22 000]	1%
17	Chad	18 000 [10 000–22 000]	1%
18	Ghana	14 000 [12 000–16 000]	1%
19	Swaziland	13 000 [12 000–15 000]	1%
20	Lesotho	13 000 [11 000–14 000]	1%

Table 5.2. Percentage of deaths attributable to HIV among children younger than five years, selected high-burden countries, 2000

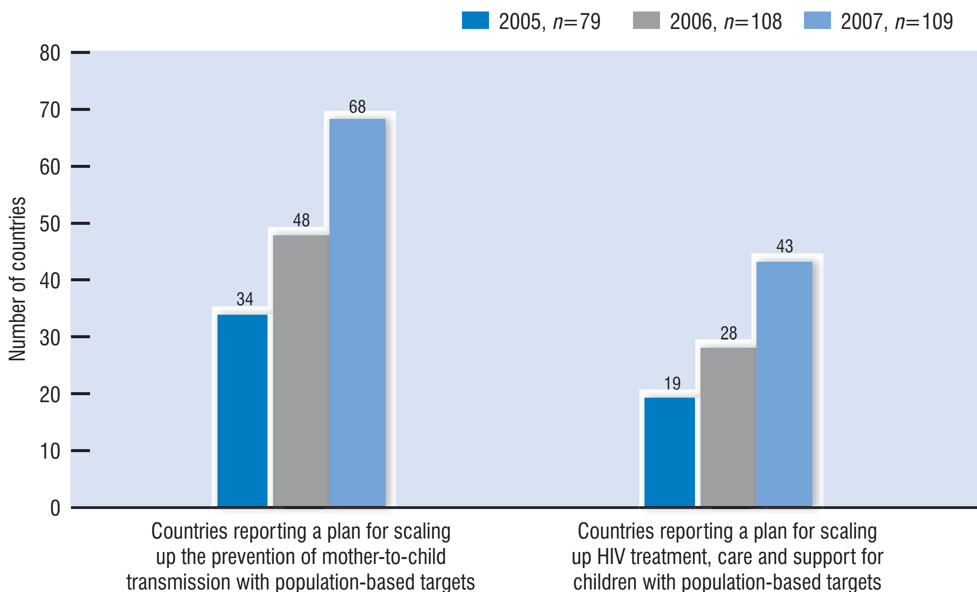
Country	Deaths among children younger than five years attributable to HIV (%)
South Africa	57
Lesotho	56
Botswana	54
Namibia	53
Swaziland	47
Zimbabwe	41

Source: *World health statistics 2008 (2).*

In the Declaration of Commitment on HIV/AIDS adopted at the United Nations Special Session on HIV/AIDS in 2001 *(4)*, countries pledged to reduce the proportion of infants with HIV by 50% by 2010 and to ensure that 80% of pregnant women attending antenatal care have access to essential services to reduce mother-to-child transmission. Global and national political commitment to scale up interventions for preventing mother-to-child transmission has intensified in recent years, and an increasing number of countries are expanding their national programmes.

In 2007, nearly all of the 20 countries with the highest number of pregnant women with HIV had developed national plans for scaling up the prevention of mother-to-child transmission and HIV treatment, care and support for children. Globally, 88 of 109 reporting countries (81%) had a plan for scaling up the prevention of mother-to-child transmission, and 68 of these included population-based targets as called for in the Abuja Call to Action *(5)*. This represents a substantial increase from only 34 countries that had national plans with population-based targets in 2005. Sixty-two (57%) countries also reported having a plan for scaling up HIV treatment, care and support for children (and 43 of these included population-based targets), which is more than twice the number of countries with such a plan in 2005 (Fig. 5.1).

Fig. 5.1. Number of countries with national scale-up plans and population-based targets for the prevention of mother-to-child transmission and HIV treatment, care and support for children, 2005–2007



n: number of reporting countries

The United Nations recommends the implementation of a comprehensive strategic approach for preventing HIV infection among infants and children that includes four elements (Box 5.1) *(6)*:

- primary prevention of HIV infection among women of childbearing age;
- preventing unintended pregnancies among women living with HIV;
- preventing HIV transmission from women living with HIV to their infants; and
- providing appropriate treatment, care and support to mothers living with HIV and their children and families.

Scaling up this comprehensive range of interventions will bring countries closer to universal access goals by preventing new HIV infections in women and children; ensuring that women living with HIV and children exposed to HIV have access to treatment and care; and prolonging and preserving the quality of life for mothers, children and families.

The regional and country-level data on access to HIV services for women and children presented in this section have been compiled from information reported by national programmes in 109 countries[1] representing 93% of pregnant women and 99% of the estimated number of pregnant women living with HIV who need antiretrovirals for reducing mother-to-child transmission.

Box 5.1. The Interagency Task Team on Prevention of HIV Infection in Pregnant Women, Mothers and their Children

The Interagency Task Team on Prevention of HIV Infection in Pregnant Women, Mothers and their Children (IATT) is co-convened by UNICEF and WHO and represented by 20 partner agencies that work on preventing mother-to-child transmission of HIV and HIV treatment and care for children. The IATT works with partners to put into operation the four elements of the comprehensive approach and supports countries in making progress towards universal access goals.

The IATT has established five working groups in areas that require additional guidance and efforts to support country-level scale-up:
(1) laboratory support
(2) HIV treatment, care and support for children
(3) infant and young child feeding
(4) primary prevention and sexual and reproductive health of people living with HIV
(5) monitoring and evaluation.

In 2007, the IATT released guidance for the global scaling up of interventions to prevent the mother-to-child transmission of HIV *(7)*. The guidance recommends specific actions to accelerate the scaling up of activities based on the four elements and provides a framework for building partnerships among national governments, civil society and international agencies.

Recommended priority strategies and actions at the country level include:

- government leadership, commitment and accountability to the goal of universal access to prevention of mother-to-child transmission and HIV care and treatment for children;
- district-driven delivery of a standard package of comprehensive services;
- provider-initiated HIV testing and counselling in maternal, newborn and child health settings;
- longitudinal HIV care management in maternal, newborn and child health settings;
- increased access to antiretroviral therapy for pregnant women, mothers, children and families;
- strengthening advice on infant feeding and nutrition and counselling and support for women, their children and their families; and
- operationalizing the link between the delivery of services for preventing the mother-to-child transmission of HIV and sexual and reproductive health care.

1 Data reported in response to the 2007 Report Card on Prevention of Mother-to-Child Transmission of HIV and Paediatric HIV Care and Treatment in Low- and Middle-income Countries.

5.1 Primary prevention of HIV for women of childbearing age

The number of women living with HIV worldwide has increased by 1.6 million since 2001 *(1)*. Preventing new HIV infections among women is critical not only for their own health but also to reduce future HIV infections among infants, especially in sub-Saharan Africa, where half the female population is of childbearing age *(8)*.

WHO and UNICEF recommend integrating primary prevention into programmes for preventing mother-to-child transmission to assist women who test HIV-negative in remaining uninfected throughout pregnancy, childbirth and breastfeeding. This is especially important because recent seroconverters are more likely to transmit HIV to their infants.

Interventions for the primary prevention of HIV include a wide range of activities provided within communities and in health facilities with two main approaches: activities aimed at changing individual-level behaviour and community-level interventions.

HIV prevention messages for individual HIV risk reduction can be disseminated in various ways such as through the mass media, information campaigns and outreach to specific groups and within health facilities. Their translation into practice can be gauged through trends in individually reported behaviour and ultimately reflected in HIV incidence if recently acquired HIV can be measured accurately at the population level.

Data from recent population-based surveys *(9)* show that, in most countries, less than half of men and women with more than one sexual partner in the last 12 months reported using a condom during their last sexual intercourse (Table 5.3).

Table 5.3. Percentage of women and men aged 15–49 years in selected countries who had more than one partner in the past 12 months and reported using a condom during their last sexual intercourse, 2005-2007

Country	Year	15–24 years		25–49 years	
		Women	Men	Women	Men
Colombia	2005	35.5	…	26.5	…
Congo	2005	22.2	36.5	24.1	26.5
Côte d'Ivoire	2005	45.1	61.8	34.8	25.3
Democratic Republic of the Congo	2007	8.6	22.3	6.9	12.3
Haiti	2005	22.6	50.5	19.4	22.7
Mali	2006	7.9	28.2	8.3	9.1
Namibia	2007	73.7	82.2	55.5	68.8
Ukraine	2007	62.7	63.7	39.8	36.8
Zambia	2007	33.1[a]	43.1	33.1[a]	22.9

Source: Demographic and Health Surveys [web site] *(9)*.
… not available.
a For the age group 15–49 years.

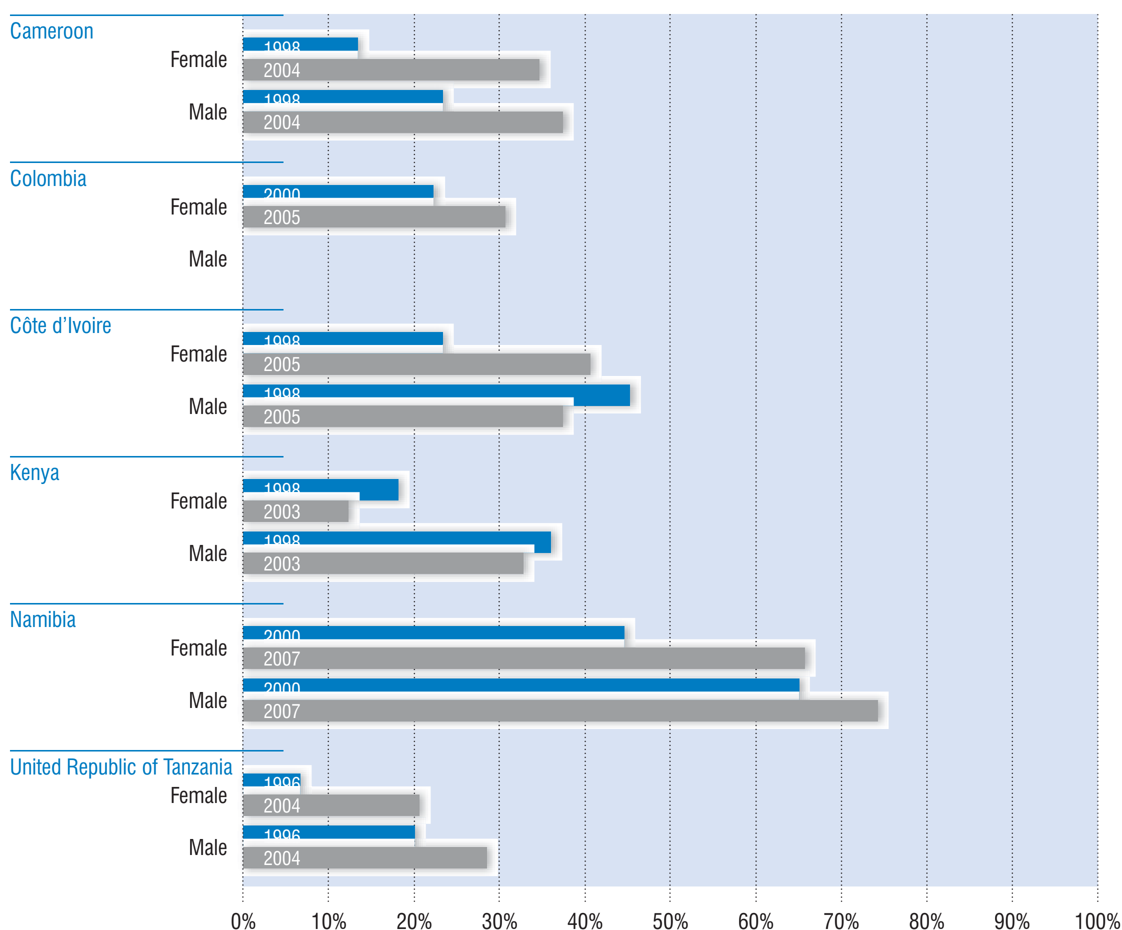
Trend data from countries with repeated population-based surveys *(9)* suggest that in most cases, reported condom use is increasing over time among people aged 15–49 years who had more than one partner in the past 12 months. However, condom use has declined in some countries, including among men in Côte d'Ivoire and among both men and women in Kenya (Fig. 5.2).

Health facilities provide an important setting for integrating priority HIV prevention interventions with sexual and reproductive health services for women and their sexual partners. Antenatal care settings that offer interventions for preventing mother-to-child transmission as part of a package of services can reinforce HIV primary prevention messages along with other information on HIV and routine information on antenatal care and delivery, sexually transmitted infections and family planning.

In addition, testing and counselling for couples is becoming an increasing focus for many programmes, providing an opportunity to increase the involvement of women's sexual partners in antenatal care. Condom promotion and distribution are also being integrated as a component of the package in many countries.

However, scaling up the provision of primary prevention services in the context of preventing mother-to-child transmission is hampered by several societal and structural barriers such as the overall lack of involvement of male partners and the shortage of skilled health care providers.

Fig. 5.2. Percentage of women and men aged 15–49 years who had more than one partner in the past 12 months and reported using a condom during their last sexual intercourse in selected countries with repeat demographic and health surveys, 1998–2007



Source: Demographic and Health Surveys [web site] *(9)*.

Several programmes in resource-limited settings are adopting approaches such as task-shifting and the use of less specialized health care workers, including community counsellors and people living with HIV, to address these concerns. Such approaches not only contribute to reducing the workload of more specialized health care workers but also facilitate individual post-test counselling for both HIV-positive and HIV-negative women *(10)*.

5.2 Preventing unintended pregnancies among women living with HIV

The prevention of unintended pregnancies among women living with HIV can be facilitated when they come into contact with health services providing HIV testing and counselling, reproductive health services, maternal and child health care and HIV care and antiretroviral therapy. Enabling women to time and space their pregnancies also leads to improvement in their health and can reduce maternal mortality and increase child survival.

Globally, about 80 million unintended pregnancies occur every year because an estimated 120 million couples have an unmet need for safe and effective contraception *(11)*. Unmet need for contraception and family planning refers to the proportion of all women who are at risk of pregnancy and want to space or limit their childbearing but are not using contraception.[2] Sub-Saharan Africa has the lowest levels of contraceptive use, with only 22% of women of reproductive age who are married or in union using any family planning method (with 15% using a modern method) *(14)*.[3] As a result, nearly 27 million women in sub-Saharan Africa have an unmet need for contraception. Meeting the contraceptive needs of these women, including women with HIV, will greatly reinforce efforts to reduce the number of HIV infections among infants.

Facility-based data from some settings confirm the existence of unmet need for family planning among women living with HIV. Studies undertaken by Family Health International have documented levels of unmet need ranging from 9% to 14% among clients of antiretroviral therapy services in Ghana *(15)*. Studies in Côte d'Ivoire, South Africa and Uganda have revealed higher levels of unintended pregnancies among women with HIV, ranging from 51% to 99% *(16,17)*.

Women living with HIV who know their status are in particular need of sexual and reproductive health services to make informed decisions about their future reproductive life, including when to seek appropriate support and services to prevent unintended pregnancies *(18)*. Many studies have emphasized the need to address both family planning and HIV prevention *(19)*. Male and female condoms are the only contraceptive methods that protect against the transmission of HIV and other sexually transmitted diseases as well as unwanted pregnancy. Family planning is now a recommended component of most services for preventing mother-to-child transmission. Antenatal care programmes are also beginning to offer contraceptive information to promote postpartum use *(20)*.

Scaling up such functional integration between services for preventing mother-to-child transmission and reproductive health programmes will enable countries to maximize HIV prevention and to improve maternal and child health outcomes (Box 5.2).

Box 5.2. Integrating sexual and reproductive health services with HIV services

Priority interventions to integrate sexual and reproductive health services with HIV services include:

- promoting and providing condoms (male and female) as a means of protection against both unintended pregnancy and sexually transmitted infections, including HIV;
- providing or referring to sexual and reproductive health services that include counselling on reproductive choices for people living with HIV, planning for a pregnancy, protecting against a pregnancy or interrupting an unintended pregnancy where abortion is legal;
- ensuring postpartum maternal health services that provide counselling about and offer family planning methods, including condoms; and
- providing advocacy and education on sexual health within HIV care and treatment services, reproductive health settings and youth-friendly services as an effective means of changing risk-taking behaviour that can potentially result in reduced unintended pregnancy and sexually transmitted infections, including HIV, and other illnesses related to sexual and reproductive health.

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2 *Unmet need* constitutes: "Women who are at risk of pregnancy (fecund) who desire to either stop childbearing or postpone their next birth for at least two years, or who are undecided about if or when to have another child, and who are not using a contraceptive method, and who are pregnant or amenorrheic and whose pregnancies were unwanted or mistimed, among all women of reproductive age (15–49) who are married or in consensual union." (12,13).

3 Family planning method can be used interchangeably with contraceptive method. It includes clinic and supply (modern) methods and non-supply (traditional) methods. *Traditional methods* include rhythm, withdrawal, abstinence and lactational amenorrhoea. *Modern* methods include female and male sterilization, intrauterine devices (IDUs), hormonal methods (oral pills, injectable and hormone-releasing implants, skin patches and vaginal rings), condoms and vaginal barrier methods (diaphragms, cervical cap and spermicidal foams, jellies, creams and sponges). Surgical sterilization is usually considered to be contraception only if the operation is performed at least partly to avoid having more children (sterilization is also carried out solely for health reasons).

5.3 Preventing the vertical transmission of HIV from mother to child

Reducing HIV transmission from a pregnant woman living with HIV to her infant requires a range of interventions beginning with HIV testing and counselling for pregnant women; followed by antiretroviral prophylaxis for pregnant women with HIV and their newborn baby or antiretroviral therapy for the mother if eligible; safe obstetric interventions; and counselling and support for safer infant feeding options.

5.3.1 HIV testing and counselling

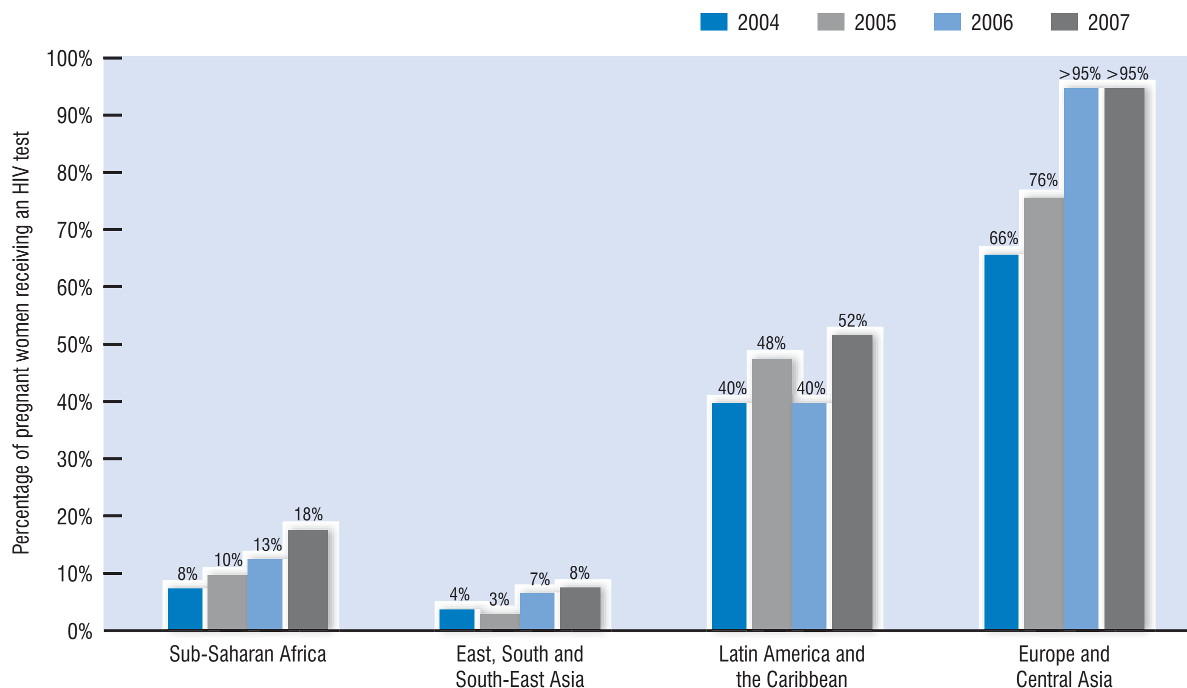
Global coverage of HIV testing among pregnant women has increased in recent years (Fig. 5.3). About 18% of the total estimated number of pregnant women in low- and middle-income countries (20.6 million of 115 million pregnant women) received an HIV test in 2007, compared with 16% in 2006 and 10% in 2004 and 2005. The percentages are slightly higher among women attending antenatal care during their pregnancy, with 21% tested in 2007 versus 13% in 2004.

Despite this progress, the overall level of testing remains low in all regions except Europe and Central Asia. In the 10 countries with the highest estimated numbers of pregnant women with HIV worldwide, HIV testing coverage among pregnant women varies between 4% in Nigeria to 64% in South Africa and 65% in Zambia.

Antenatal care coverage is relatively high in most low- and middle-income countries. This provides an important window of opportunity for health care providers to routinely recommend HIV testing and counselling to pregnant women as part of a comprehensive package of interventions for antenatal care and delivery. For example, both South Africa and Zambia have high rates of antenatal care coverage (92% and 93% respectively) and a corresponding high proportion of pregnant women tested for HIV (64% and 65% respectively) relative to the regional average.

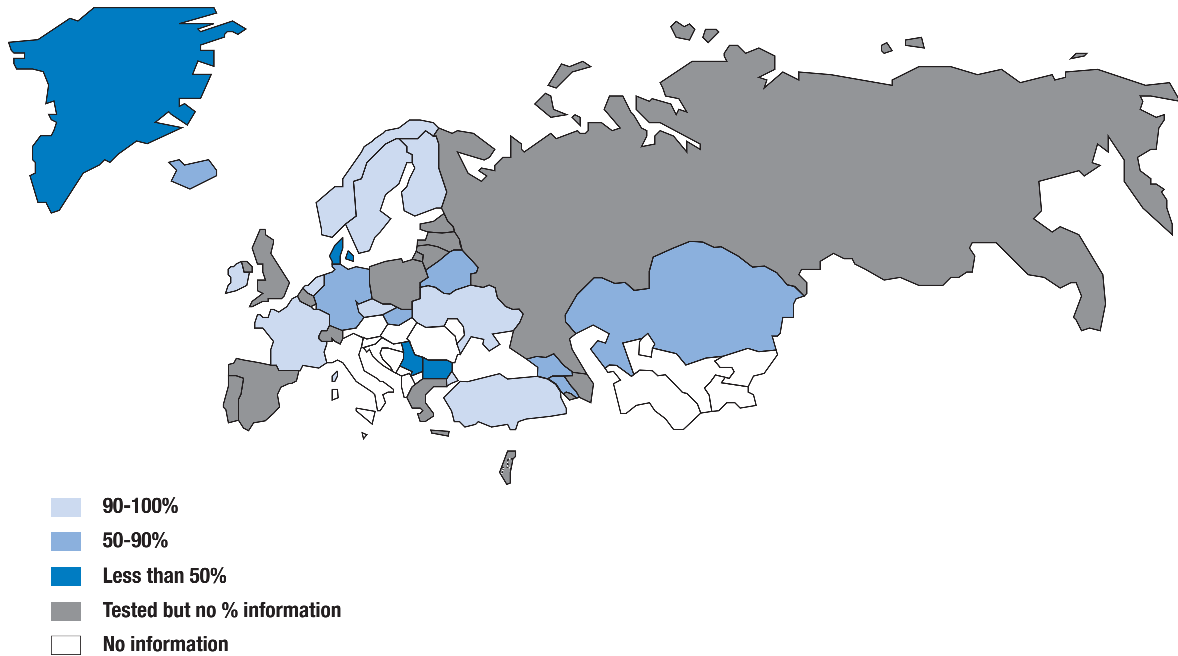
Introducing provider-initiated testing and counselling and rapid HIV testing into the standard package of antenatal care and delivery services in high prevalence countries has been shown to significantly increase access to services for

Fig. 5.3. Percentage of pregnant women in low- and middle-income countries receiving an HIV test, 2004–2007



No data are available for the Middle East and North Africa.

Fig. 5.4. Percentage of pregnant women tested for HIV as part of routine care[a] in the WHO European Region, 2006



Source: EuroHIV *(22)*.

a Different terms that mean "provider-initiated testing and counselling" may be used in different settings.

preventing mother-to-child transmission and has often been the factor determining high levels of HIV testing in antenatal care settings *(6,21)*. Provider-initiated testing and counselling in antenatal care settings is implemented widely in Europe and the United States (Fig. 5.4).

In 2007, 87 of 109 low- and middle-income countries reported the implementation of provider-initiated testing and counselling in all or in some sites, compared with 82 of 108 reporting countries in 2006 and 62 of 79 reporting countries in 2005. Among countries in sub-Saharan Africa, Botswana introduced provider-initiated testing and counselling in pregnant women as part of routine care in 2004. Within six months, antenatal HIV testing increased from 75% to 95% *(23)*. A recent study in urban Zimbabwe *(24)* showed that HIV testing rates increased from 65% to 99% in the first six months where a policy on provider-initiated testing and counselling was implemented.

In the absence of provider-initiated testing and counselling, on-site testing rates often remain low, even where antenatal care attendance rates are high. This is primarily because the test is not offered but also due to several other factors such as the unavailability of tests, inadequate counselling and fear of stigma *(25)*.

5.3.2 Antiretrovirals for preventing mother-to-child transmission

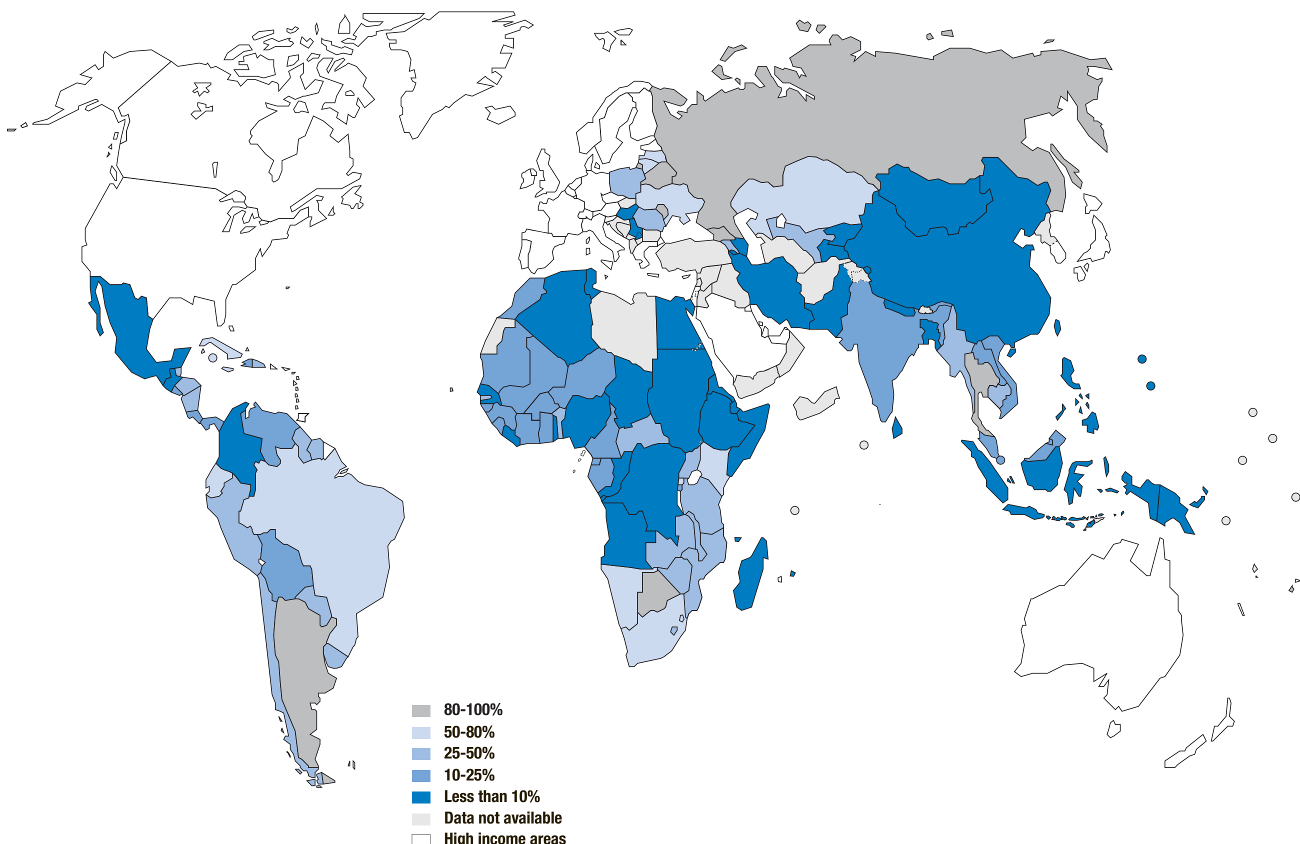
A pregnant woman with HIV must be assessed to determine whether she is eligible to receive antiretroviral therapy. When antiretroviral therapy is not indicated for her own health, pregnant women with HIV should receive combination antiretroviral prophylaxis to prevent HIV transmission to their infants *(26)*. Both antiretroviral prophylaxis for mothers not eligible to receive antiretroviral therapy for their own health and antiretroviral therapy for those who are eligible are effective at reducing the vertical transmission of HIV.

HIV-exposed infants also require antiretroviral prophylaxis as soon after delivery as possible. Combination regimens result in the greatest reduction of transmission and are always required if the mother did not receive antiretroviral prophylaxis. Research is ongoing on the role of extended antiretroviral prophylaxis among infants who continue to be at risk of acquiring HIV through breastfeeding and in the context of greater access to maternal antiretroviral therapy.

About 33% of pregnant women living with HIV received antiretrovirals to prevent mother-to-child transmission in 2007 (491 000 of the total estimated 1.5 million pregnant women living with HIV). This represents a noteworthy increase from 23% in 2006, 15% in 2005 and 10% in 2004 (Fig. 5.5). Certain countries have succeeded in dramatically reducing transmission by increasing the coverage of interventions to prevent mother-to-child transmission. The estimated mother-to-child transmission declined from 30.5% in 2001 to 11.4% in 2007 in Cambodia and from 30.5% in 2001 to 8.9% in 2007 in Rwanda[4].

Table 5.4 provides recent estimates of the number of women who need antiretrovirals (both antiretroviral prophylaxis and antiretroviral therapy) to prevent mother-to-child transmission in 2007.

Fig. 5.5. Coverage of antiretrovirals to prevent mother-to-child transmission of HIV in low- and middle-income countries, 2007



4 Estimates based on country data, UNAIDS/WHO estimates and projections using Spectrum software.

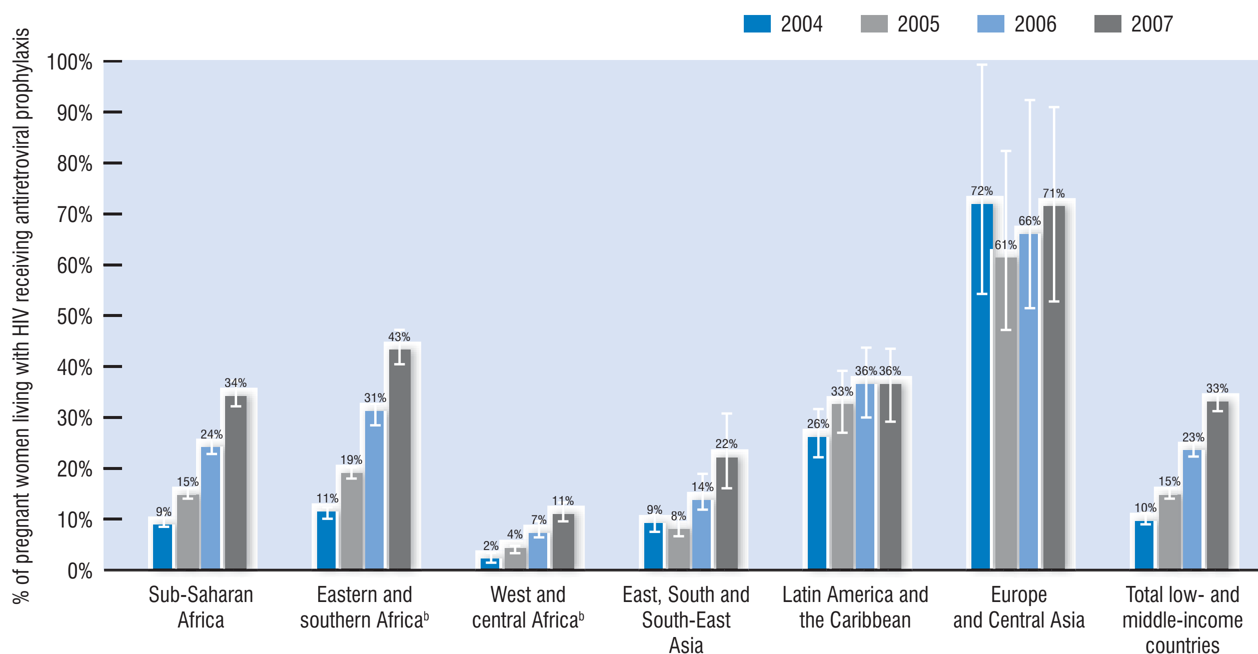
Table 5.4. Estimated number of pregnant woman with HIV receiving and needing antiretrovirals for preventing mother-to-child transmission and percentage coverage in low- and middle-income countries according to region, 2007

Geographical region	Number of pregnant women with HIV receiving antiretrovirals for preventing mother-to-child transmission, 2007	Estimated number of pregnant women living with HIV needing antiretrovirals for preventing mother-to-child transmission, 2007 (range)	Estimated percentage of pregnant women living with HIV receiving antiretrovirals for preventing mother-to-child transmission, 2007 (range)[a]
Sub-Saharan Africa	446 000	1 300 000 [1 200 000–1 400 000]	34% [32–37%]
Eastern and southern Africa	403 000	930 000 [860 000–1 000 000]	43% [40–47%]
West and central Africa	43 000	390 000 [320 000–450 000]	11% [10–13%]
Latin America and the Caribbean	13 000	36 000 [30 000–45 000]	36% [29–43%]
Latin America	11 000	29 000 [23 000–37 000]	38% [30–48%]
Caribbean	2 300	7 200 [6 100–8 500]	32% [27–38%]
Europe and Central Asia	10 000	14 000 [11 000–19 000]	71% [53–91%]
Middle East and North Africa	<100	19 000 [13 000–27 000]	<1% [<1%]
East, South and South-East Asia	22 000	100 000 [72 000–140 000]	22% [16–31%]
All low- and middle-income countries	491 000	1 500 000 [1 400 000–1 600 000]	33% [31–35%]

Note: some numbers do not add up due to rounding. For an explanation of the methods used, see explanatory notes to Annex 3.
a The coverage estimate is based on the estimated numbers of pregnant women living with HIV receiving and needing antiretrovirals.

Sub-Saharan Africa, which accounts for nearly 90% of all pregnant women living with HIV in low- and middle-income countries, has made the most progress in the past three years. In western and central Africa, the number of pregnant women with HIV who received antiretrovirals to prevent mother-to-child transmission increased 5.5-fold between 2004 and 2007 (Fig. 5.6). However, despite this increase, only 11% [range 10–13%] of pregnant women who needed antiretrovirals had access in 2007 in this subregion. Coverage with antiretrovirals in eastern and southern Africa, which includes 12 of the 20 countries with the highest numbers of pregnant women with HIV, increased four-fold, reaching 403 000 women in 2007 versus 106 700 women in 2004 (coverage of 43% [range 40–47%]).

Fig. 5.6. Percentage of pregnant women with HIV receiving antiretrovirals for preventing mother-to-child transmission of HIV in low- and middle-income countries, 2004–2007[a]



I The bar indicates the uncertainty range around the estimate.
a For an explanation of the methods used, see explanatory notes to Annex 3.
b Values for Eastern and southern Africa and West and central Africa are included in sub-Saharan Africa.

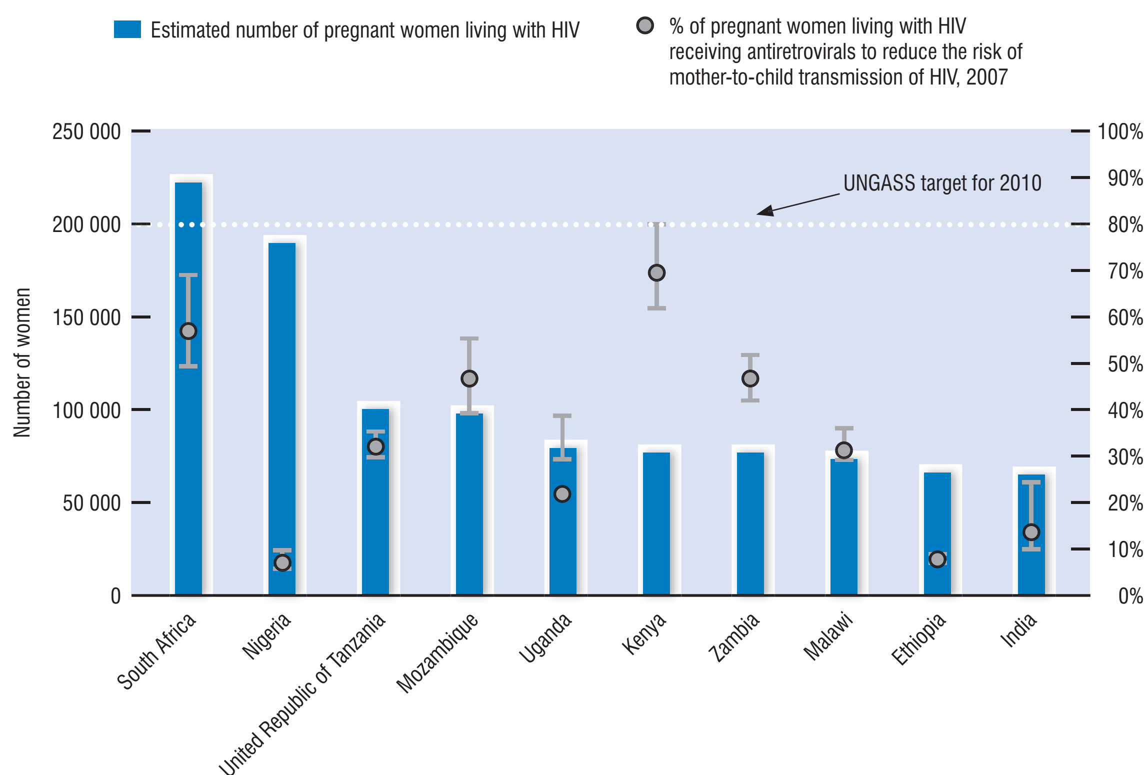
The coverage of antiretrovirals for preventing mother-to-child transmission varies among the 10 countries that have the largest number of pregnant women with HIV. In South Africa, home to more than 200 000 pregnant women living with HIV in 2007, the coverage of antiretrovirals for preventing mother-to-child transmission increased from 15% in 2004 to 57% in 2007 (Fig. 5.7). Coverage increased from 3% to 46% in Mozambique and from 25% to 69% in Kenya during the same time period.

Coverage also increased substantially in other countries between 2004 and 2007, including Cambodia (7% in 2004 to 32% in 2007), Central African Republic (2% to 34%), Ghana (1% to 21%), Guyana (21% to 43% in 2006), India (5% to 14%) and Thailand (48% to 92%).

However, progress has been slower in some large countries such as the Democratic Republic of the Congo, Ethiopia and Nigeria, where the coverage of antiretrovirals for preventing mother-to-child transmission remained below 10% in 2007. Urgent efforts are needed to scale up access to services in these countries to meet the target adopted by the United Nations General Assembly Special Session on HIV/AIDS which includes 80% coverage of antiretrovirals to reduce mother-to-child transmission.

The coverage of antiretroviral prophylaxis among infants born to women with HIV follows a similar trend, increasing from 7% in 2004 to 12% in 2005, 18% in 2006 and 20% by the end of 2007 (Fig. 5.8). The widening gap between coverage of antiretrovirals for mothers and for infants raises concern and needs to be addressed (Box 5.3).

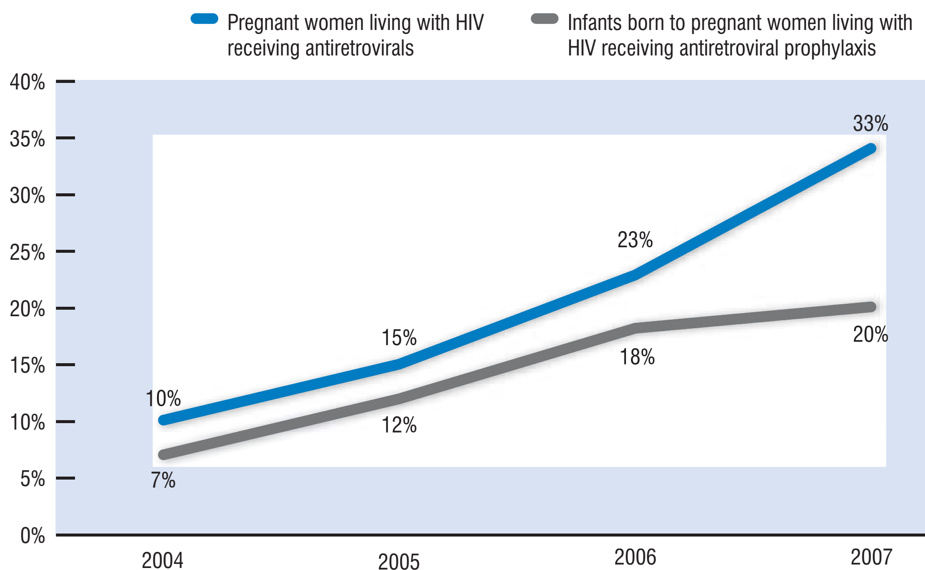
Fig. 5.7. Percentage of pregnant women living with HIV receiving antiretrovirals for preventing mother-to-child transmission of HIV in the 10 countries with the highest estimated number of pregnant women living with HIV, 2007



UNGASS: United Nations General Assembly Special Session on HIV/AIDS in 2001

The bar indicates the uncertainty range around the estimate.

Fig. 5.8. Pregnant women living with HIV and infants born to them who received antiretrovirals to reduce mother-to-child transmission, 2004–2007



Box 5.3. Involving male partners, families and communities

Stigma, domestic violence and lack of male involvement in antenatal care often discourage women from accessing services to prevent mother-to-child transmission *(28–31)*. Providing support to these women, including from their partners, families and communities, should be key components of all programmes for preventing mother-to-child transmission.

Several pilot projects have demonstrated improved outcomes when male partners are encouraged to take an HIV test and are involved in counselling and care for women *(32)*. In a health centre in Mwanza, United Republic of Tanzania, the involvement of male partners in counselling increased ten-fold and male partner testing by 30% within the first month of introducing a strategy to issue formal invitations to male partners. In Cambodia, women attending a "mother class" that offered testing and counselling for preventing mother-to-child transmission were four times more likely to accept testing if their partners also attended the class *(33)*.

A community-based mothers2mothers (m2m) programme was introduced in Western Cape, South Africa in 2001 to provide information, psychosocial mentoring and emotional support to pregnant and postpartum women with HIV and increase their utilization of health services *(34)*. By 2007, there were more than 100 m2m sites throughout South Africa. m2m employs new mothers as "mentor mothers" to support other women living with HIV through one-on-one and group support sessions in antenatal, maternal, newborn and child health care settings. Although it does not provide HIV testing or other health services, m2m helps to increase uptake of services by reducing stigma, misinformation and cultural barriers to access.

A recent study found that m2m programmes have resulted in increased access to antiretrovirals to prevent mother-to-child transmission for women and infants, safer infant feeding practices, increased numbers of women receiving a CD4 test and improved use of family planning post-pregnancy *(35)*. Drawing on this successful model, pilot sites have also been established or are planned in nine other countries in eastern and southern Africa *(34)*.

5.3.3 Antiretroviral regimens

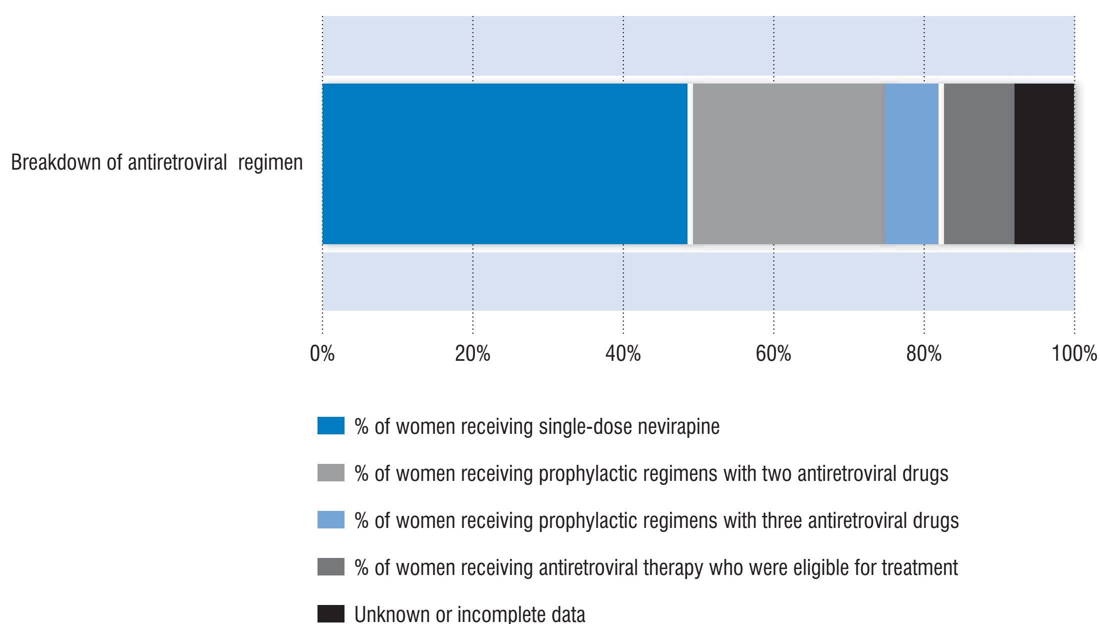
The effectiveness of antiretrovirals in preventing mother-to-child transmission varies with the type and combination used and the duration of treatment. Simple, short-course antiretroviral drug regimens have been proven to reduce mother-to-child transmission, but combination regimens (such as zidovudine and single-dose nevirapine) taken for longer periods of time are more effective *(36,37)*.

WHO guidelines (26) recommend the use of more efficacious prophylactic antiretroviral regimens for preventing mother-to-child transmission. They highlight the need to increase efforts to ensure that women who are eligible for antiretroviral therapy have access to treatment based on the scientific and programmatic rationale regarding the effectiveness and safety of various regimens *(26)*.

In 2007, 60 countries[5] provided disaggregated data on antiretroviral regimens used to prevent mother-to-child transmission. These data reveal that 49% of women (119 400 of 242 000) received single-dose nevirapine in 2007, 26% (62 000) received a regimen using a combination of two antiretroviral drugs and 8% (18 800) received a regimen using a combination of three antiretroviral drugs (Fig. 5.9).

In sub-Saharan Africa, more than half the reporting countries (26 of 44 countries) provided disaggregated data on the use of antiretroviral regimens in 2007. Among these countries, 50% of the total number of pregnant women with HIV receiving antiretrovirals for preventing mother-to-child transmission received single-dose nevirapine, 27% received a prophylactic regimen using a combination of two antiretroviral drugs,

Fig. 5.9. Distribution of antiretroviral regimens received by pregnant women living with HIV in 60 countries with disaggregated data, 2007



5 These 60 countries account for about 60% (911 500) of the 1.5 million estimated pregnant women living with HIV in low- and middle-income countries. The regional distribution of the 60 countries are: East, South and South-East Asia, 9 countries; Eastern Europe and Central Asia, 12 countries; Latin America and the Caribbean, 8 countries; North Africa and the Middle East, 5 countries; and sub-Saharan Africa, 26 countries.

6% received a highly active regimen for prophylaxis to prevent mother-to-child transmission using a combination of three antiretroviral drugs and 9% received antiretroviral therapy for their own health (for pregnant women living with HIV eligible for treatment).

Between 2006 and 2007, all regions reported a decrease in the number of countries using single-dose nevirapine as the most common antiretroviral regimen for preventing mother-to-child transmission. An increasing number of countries are shifting towards a national policy of providing more effective antiretroviral prophylactic regimens to pregnant women living with HIV. However, monitoring and evaluation systems in many countries cannot yet capture these data. As a result, accurate global data on the proportion of women accessing more efficacious regimens are currently not available.

5.3.4 Infant feeding

HIV can be transmitted from a mother to her child through breastfeeding. Without intervention, breastfeeding carries an additional transmission risk of about 5–20%, depending essentially on the disease status of the mother (measured by viral load and CD4 count), the duration and mode of breastfeeding and the existence of mastitis and breast abscess.

However, not breastfeeding carries important health risks to the infant, such as diarrhoeal disease, respiratory illness, malnutrition and increased mortality, especially if access to clean water is not assured.

In 2006, a technical consultation on HIV and infant feeding organized by United Nations agencies reviewed the most recent scientific evidence and programmatic experience in this area *(37)*. WHO and UNICEF have also developed a package of guidance and tools in collaboration with partners *(38)* to assist countries in designing and implementing policies and guidelines on infant feeding when the mother has HIV (Box 5.4). Many countries now have such policies in place.

A recent study in Côte d'Ivoire where antiretroviral prophylaxis and free infant formula were offered to pregnant women living with HIV *(39)* provides evidence to support these recommendations. In this study and similar settings, the combined risk of HIV infection and death by 18 months of age among children who were breastfed for 3–6 months was similar to that among children who were formula-fed from birth *(40)*. Exclusive breastfeeding has also been shown to carry a lower risk of HIV transmission than mixed feeding (breastfeeding as well as feeding the infant other fluids or foods during the first six months of life) *(41)*. A recent study of an outbreak of infant diarrhoea in Botswana also found significantly higher rates of mortality among non-breastfed infants than among those who were breastfed, regardless of HIV status *(42)*.

Since many women living with HIV are unaware of their HIV status, promoting exclusive breastfeeding for the general population will probably lead to lower rates of HIV transmission among women living with HIV who do not know their HIV status *(43)*. The rates of exclusive breastfeeding among infants younger than six months of age have been slowly increasing worldwide, up by about 5–6 percentage points in the last 15 years to 39% as of 2005 *(44)*. Some countries such as Cambodia have had great success in increasing exclusive breastfeeding rates, from about 11% in 2000 to about 60% in 2005 *(45)*.

Outside research studies, few countries routinely report the infant feeding practices of women with HIV. Efforts are undergoing to implement a standardized indicator to monitor infant feeding practices among infants born to mothers with HIV. In Botswana's national programme, where formula is provided free of charge to all women with HIV, 97% of pregnant women living with HIV reportedly choose formula-feeding *(46)*. This proportion is lower in places that do not offer formula free of charge or where counsellors are able to fully explain the benefits and risks of different infant feeding options to mothers and support them in making a decision appropriate to their circumstances. In a research study in South Africa in which high-quality infant feeding counselling was made available, 9% of women living with HIV initially chose formula-feeding *(47)*.

Box 5.4. Recommendations on HIV and infant feeding

The key recommendations on HIV and infant feeding indicate the following.

- The most appropriate infant feeding option for a mother with HIV depends on her individual circumstances, including her health status and the local situation, but should take into consideration available health services and the counselling and support she is likely to receive.
- Exclusive breastfeeding is recommended for infants of mothers living with HIV for the first six months of life unless replacement feeding is acceptable, feasible, affordable, sustainable and safe for them and their infants before that time.
- When replacement feeding is acceptable, feasible, affordable, sustainable and safe, avoidance of all breastfeeding by mothers living with HIV is recommended.

Increasing evidence also indicates that giving women with HIV antiretroviral therapy can reduce the risk of transmitting HIV to their infants through breastfeeding. The benefits of this approach for women who need antiretroviral therapy for their own health are clear. However, new data are awaited on the use of this strategy for breastfeeding women not yet eligible for treatment, for example, data on when antiretroviral therapy can be safely discontinued, and on safety for the infant.

In addition to infant feeding choices in the first months of life, countries also face the challenge of supporting mothers to ensure optimal feeding of their infants after six months of age, when exclusive breastfeeding or formula-feeding alone is no longer adequate. Several countries are pilot-testing different approaches for feeding non-breastfed children of women living with HIV, including providing enriched foods. WHO has developed guidance on feeding infants and children 6–24 months of age to assist countries in developing their policies in this area *(48)*.

5.4 Treatment, care and support for women living with HIV and their children

The fourth element of the strategy for preventing mother-to-child transmission is providing treatment, care and support to mothers living with HIV, their children and their families. Until recently, the primary focus of programmes for preventing mother-to-child transmission had been to increase access to antiretrovirals to prevent transmission. Less emphasis was placed on ensuring that women in need have access to treatment services and that infants born to mothers living with HIV receive appropriate interventions including early diagnosis, co-trimoxazole preventive treatment and antiretroviral therapy. With the rapidly expanding availability of HIV care and treatment, strengthening links between services for preventing mother-to-child transmission and services providing HIV care and treatment is essential.

5.4.1 Increasing access to antiretroviral therapy for pregnant women

Treatment for pregnant women who are eligible to receive antiretroviral therapy is vital to reducing mother-to-child transmission and morbidity and mortality among women. However, many pregnant women living with HIV miss the opportunity to have timely access to antiretroviral therapy because health care workers are unable to appropriately assess their need for antiretroviral therapy, or due to lack of access to such services.

Data reported by national governments indicate that only about 12% of pregnant women living with HIV identified during antenatal care were assessed for their eligibility to receive antiretroviral therapy in 2007, either clinically through an assessment of clinical symptoms, or immunologically by determining their CD4 cell count.

Relying on clinical signs and symptoms alone can mean that some women with severe immunosuppression but without evident disease (WHO clinical stage 3 or stage 4) may not be identified as needing antiretroviral therapy. CD4 testing should be made more available to women as part of antenatal, delivery and postpartum care by increasing the availability of machines at the district level and ensuring that pregnant women are included in CD4 monitoring (Table 5.5).

Table 5.5. Availability of CD4 testing in antenatal care facilities, selected countries, 2007

Country	% of facilities providing antenatal care that provide CD4 testing on site or have systems for collection and transport
Botswana	100
Central African Republic	2
Haiti	55
Lesotho	10
Malawi	66
Papua New Guinea	12
Swaziland	31
Zambia	18
Zimbabwe	5

Data from some countries confirm that, although overall access to antiretroviral therapy among women is higher than or equal to that among men, pregnant women living with HIV have poor access to antiretroviral therapy for their own health. In Malawi, among 9150 women who started antiretroviral therapy in the last quarter of 2007 in the public sector, only 343 (4%) had been referred from the programme to prevent mother-to-child transmission *(49)*.

Ensuring access to antiretroviral therapy for pregnant women also contributes to child survival. A recent study in Uganda observed an 81% reduction in mortality among uninfected children over a 31-month period if their HIV-infected parents were receiving antiretroviral therapy and co-trimoxazole preventive therapy *(50)*.

Testing pregnant women for HIV hence not only provides an entry point for them to receive interventions to prevent transmission to the child but also facilitates the enrolment of women, their families and future infants into longitudinal HIV prevention, care and treatment. Linking HIV services to maternal, newborn and child health services is necessary to ensure that women identified as living with HIV who need treatment can receive the necessary interventions to maximize their health and reduce transmission to their infants and partners.

5.4.2 Diagnosing HIV among infants

Without care and treatment, about one third of children living with HIV will die in their first year of life and almost 50% by the second year of life. Early infant diagnosis of HIV among HIV-exposed children and adequate follow-up are essential to effectively identify infants living with HIV and ensure the timely initiation of care and treatment.

However, standard HIV antibody testing cannot identify infected infants in their first year of life, as it detects maternal HIV antibodies that are transferred to the baby during pregnancy (and subsequently decline slowly in the first year of life). More demanding testing methods that rely on detecting HIV, otherwise called virological tests, are required for diagnosing young infants. As infants with HIV frequently progress to severe disease or death without prior warning symptoms or signs, testing needs to be recommended for all HIV-exposed infants to detect HIV infection.

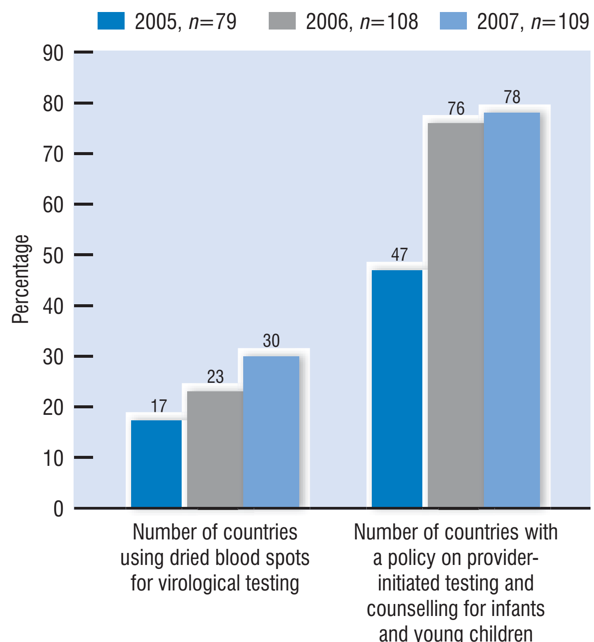
Where virological testing is unavailable, infants still need to be closely monitored, and clinical algorithms and HIV antibody and CD4 tests are needed to identify infected infants and children as early as possible *(51)*. HIV antibody testing can be used to identify HIV-exposed infants and, combined with close follow-up, may allow early recognition of infants with HIV and their referral for assessing the possible need for HIV treatment.

In 2007, 77 countries (71% of all reporting low- and middle-income countries) provided data on early testing of infants and young children. Of the 715 000 infants born to women living with HIV in 2007 in these countries, only 8% (54 900) were tested within the first two months of birth.

Virological testing detects HIV DNA or RNA. HIV DNA testing (and HIV antibody testing) can also be reliably performed on specimens collected onto filter paper (dried blood spots) and sent to laboratories with capacity for testing. The use of dried blood spots only requires a few drops of blood from an infant. Once specimens are collected, they can be easily stored and transferred without cold-chain systems to centralized testing locations for analysis. The use of dried blood spots enables blood samples to be collected in remote locations and allows countries with a limited number of specialized laboratories to expand access to virological testing.

Scaling up the use of dried blood spots has resulted in a significant increase in access to virological testing. The number of countries using dried blood spots for virological testing increased from 17 in 2005 to 30 in 2007 (Fig. 5.10).

Fig. 5.10. Number of low- and middle-income countries with virological testing and policies for provider-initiated testing and counselling for infants and young children, 2005–2007



n: number of reporting countries

Even where virological testing is available through the use of dried blood spots, transport time and logistics can still pose barriers to providing timely results. In addition, results may arrive at the facility but the infant may not be referred to HIV clinical services in a timely manner.

Maternal, newborn and child health clinics, where a child often receives his or her first set of vaccinations, provide important opportunities to identify and test infants and children who are known to be exposed to HIV. Several countries, including

Cameroon, Malawi, Rwanda, Swaziland, United Republic of Tanzania and Zimbabwe (Box 5.5), have begun to document the mother's HIV status on the mother's and/or child's health card to facilitate the identification of HIV-exposed infants and provide appropriate diagnostic and follow-up services.

Box 5.5. Documenting the mother's HIV status on the child health card in Zimbabwe

In Zimbabwe, the mother's HIV status is documented on the child health card so that health workers seeing the child at his or her six-week visit can provide appropriate care to the child. This includes referral for virological testing to determine whether the child has been infected with HIV and requires referral to treatment services.

INFANT FEEDING

Follow-up time	6 hrs	10D	6W	2M	3M	4M	5M
Infant feeding code							
Follow-up time	6M	7M	9M	12M	15M	18M	24M
Infant feeding code							

INFANT FEEDING CODES
1. Exclusive Breast Feeding
2. Exclusive Heat Treated Breast Milk
3. Exclusive Commercial Infant Formula
4. Exclusive Modified Animal Milk
5. Mixed Feeding
6. Other Specify

CARE

NVP/Other ARVs given at birth? (Circle Yes or No) NO YES

Follow-up time	6W	2M	3M	4M	5M
Cotrimoxazole (supplied)					
Follow-up time	6M	9M	12M	15M	18M
Cotrimoxazole (supplied)					

Parent/Caregiver pre-test counselled for child test (Circle Yes or No) NO YES

Child tested date:

Test Number: .... Test Used (Specify) ....

Date Parent/Caregiver post-test counselled for child's result:

Child's sample result (Circle) 0 1

Continue Cotrimoxazole? (Circle Yes or No) NO YES
If yes refer to treatment card.

CARE COMMENTS:

MINISTRY OF HEALTH
CHILD HEALTH CARD
ZIMBABWE

GOOD INFANT FEEDING PRACTICE
Give only breast milk for the first 6 months.
Introduce solids and liquids from 6 months.
Continue breast feeding up to 24 months or beyond unless counseled otherwise by a health worker.

KUDYA KWAKANAKA KWEMWANA

MUNYISA OKUNGABANGELI INGOZI

NAME OF CHILD:
SURNAME OF CHILD:
SEX: DATE OF BIRTH:
NAME OF MOTHER:
PHYSICAL ADDRESS:
PLACE OF BIRTH:
HEALTH CENTRE:

However, most children are entering HIV care and treatment programmes for children at an older age after being identified in acute and chronic care facilities rather than as a follow-up of services for preventing mother-to-child transmission. HIV-exposed infants need to be followed up better as part of the package of services to prevent mother-to-child transmission to identify HIV-infected infants.

In countries such as Malawi and Zambia, provider-initiated testing and counselling for sick children has helped to substantially increase the numbers of HIV-infected infants and children who are detected. WHO and UNICEF are working with partners to develop operational guidance on provider-initiated testing and counselling for children.

5.4.3 Co-trimoxazole prophylaxis

Co-trimoxazole is a highly efficacious, affordable, cost-effective and widely available antibiotic that has been shown to significantly reduce morbidity and mortality among infants and children who are living with or are exposed to HIV. It has been part of the standard of care for preventing and treating *Pneumocystis jirovecii pneumonia* (PCP) since the early 1990s *(52)*. In 2006, WHO released guidance on the use of co-trimoxazole preventive therapy for children, adolescents and adults *(53)*, recommending that all HIV-exposed infants be treated with co-trimoxazole until they are no longer at risk of infection through breastfeeding and an HIV-negative status has been established. Most pneumocystis infections occur among infants younger than six months old *(54)*, which reinforces the need for timely provision of co-trimoxazole prophylaxis.

The limited data available on the provision of co-trimoxazole prophylaxis suggest that, although many national policies and recommendations now include co-trimoxazole prophylaxis, its implementation is poor. In 2007, less than 58 000 (4%) of the 1.5 million children born to pregnant women with HIV initiated co-trimoxazole by two months of age. Reasons for low coverage include the lack of national-level guidance to health care providers on co-trimoxazole prophylaxis, the lack of opportunities to document its provision in registers or child health cards and erratic supply and frequent stock-outs of drugs.

Scaling up co-trimoxazole prophylaxis for infants and children is essential and can markedly reduce morbidity and mortality among children caused by HIV simply and at low cost.

5.4.4 Antiretroviral therapy for children

HIV infection that infants acquire during pregnancy or around the time of delivery appears to progress very rapidly. In addition, a recent study indicated that early treatment of asymptomatic infants with HIV dramatically reduces the mortality rate *(55)*. Children living with HIV in low- and middle-income countries have been observed to have treatment outcomes comparable to those in adult population groups, with similar patterns of improved survival associated with initiating antiretroviral therapy at earlier stages of disease progression *(56)*. Studies also confirm that children in high-income, middle-income and low-income countries all respond well to treatment.

Substantial progress has been made in scaling-up antiretroviral therapy for children during the past two years, facilitated by several factors (Box 5.6). These include integrating HIV care and treatment for children into both existing antiretroviral therapy sites focused on adult care and into maternal, newborn and child health services; reducing the prices of antiretroviral formulations for children; approving and prequalifying fixed-dose antiretroviral combinations for children by the United States Food and Drug Administration and the WHO Prequalification Programme; and increasing advocacy for improved access to HIV care and treatment for children.

Box 5.6. Revised recommendations on initiating antiretroviral therapy among children

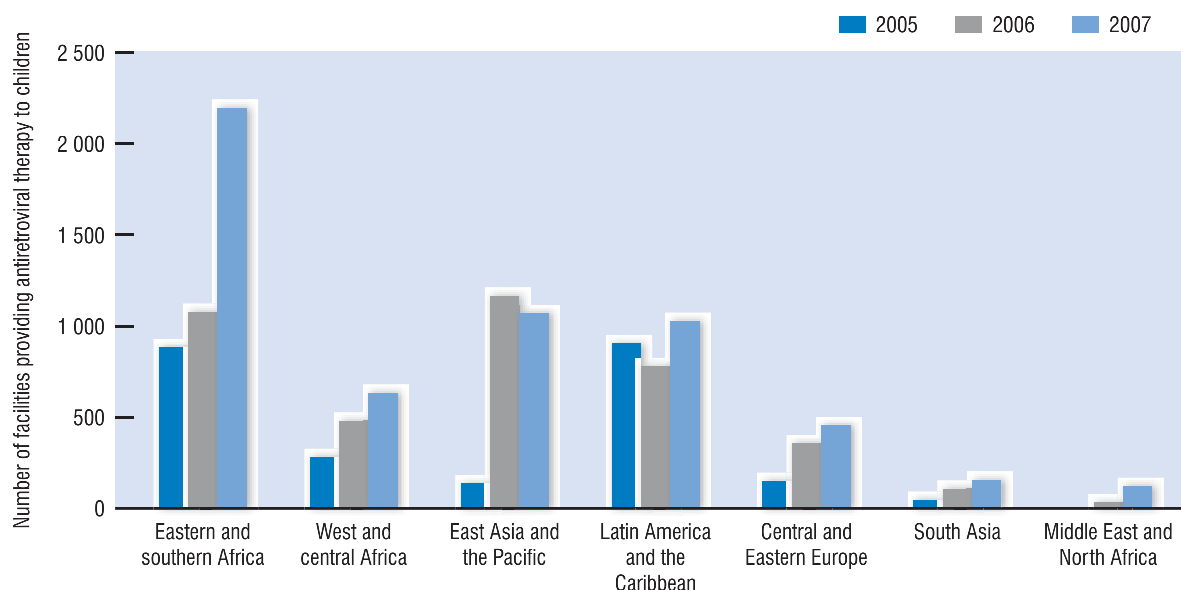
Recent studies in resource-limited settings confirm that disease progression and death occurs very rapidly in the first few months of life among infants acquiring HIV at or around delivery. More than 80% of surviving infants develop the eligibility criteria for starting antiretroviral therapy within the first six months of life *(55,57)*. A randomized clinical trial conducted in South Africa observed a 75% reduction in mortality among infants who started antiretroviral therapy as soon as they were diagnosed with HIV compared with infants who started treatment based on immunological or clinical criteria. Other research and observational data also suggest that providing antiretroviral therapy early in infancy avoids death and disease progression.

Previously, recommendations to initiate antiretroviral therapy among children were based on an immunological and clinical assessment before initiating treatment, and treatment was recommended only for the most severely affected children. In April 2007, WHO convened a guideline review meeting to examine the new evidence and consider the need to revise the existing recommendations. Experts recommended that revised criteria be developed for initiating antiretroviral therapy among infants. WHO therefore now recommends that all infants younger than one year of age with confirmed HIV infection should start antiretroviral therapy, irrespective of clinical or immunological stage.

This revised recommendation will have implications for national HIV programmes and for the estimation of HIV infection among infants and children. A special meeting of the UNAIDS Reference Group on Estimates, Modelling and Projections will be held in July 2008 to review the methods and assumptions underpinning the estimation of the burden of HIV among children to produce better estimates of the number of infants and children who need antiretroviral therapy.

This report only provides data on the number of children receiving antiretroviral therapy. Revised estimates of the antiretroviral therapy need among children will be used to assess the coverage of antiretroviral therapy among children in the next report.

Fig. 5.11. Number of facilities providing antiretroviral therapy to children, 2005–2007



A total of 5 660 facilities were reported to be providing antiretroviral therapy to children in 2007, more than twice the 2 400 facilities in 2005 (Fig. 5.11). The number of facilities providing antiretroviral therapy to children in eastern and southern Africa has increased notably. Increased early infant diagnosis and case-finding and simplified care management for children have contributed to the expansion in the number of sites providing antiretroviral therapy to children.

As of December 2007, about 198 000 children globally were receiving antiretroviral therapy, up from 127 300 in 2006 and 75 000 in 2005. This represents a 1.7-fold increase between 2006 and 2007 and a 2.6-fold increase between 2005 and 2007 (Fig. 5.12).

The vast majority of children living with HIV are in 10 countries that also comprise more than 60% of pregnant women living with HIV. Uptake of antiretroviral therapy in children increased in all 10 countries between 2005 and 2007 (Fig. 5.13). The number of children receiving antiretroviral therapy increased 2.6 times in South Africa, 3 times in Kenya, nearly 4 times in Mozambique and nearly 5 times in Zimbabwe.

Fig. 5.12. Number of children receiving antiretroviral therapy in low- and middle-income countries, 2005–2007

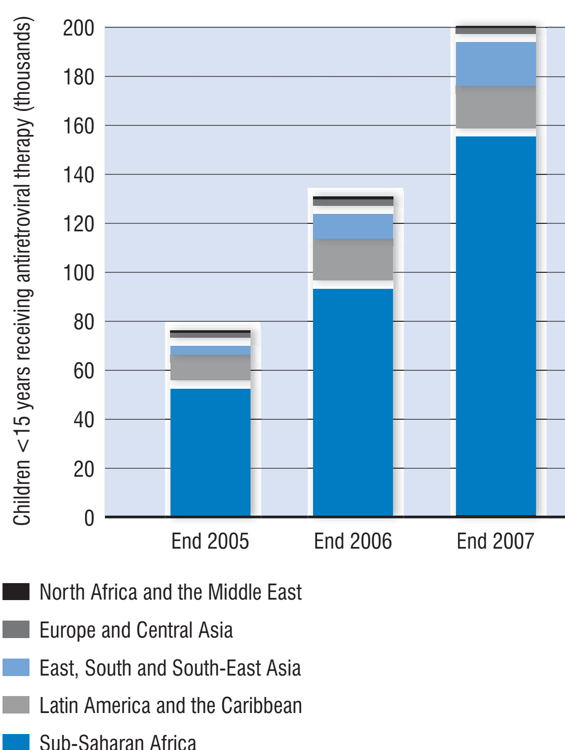
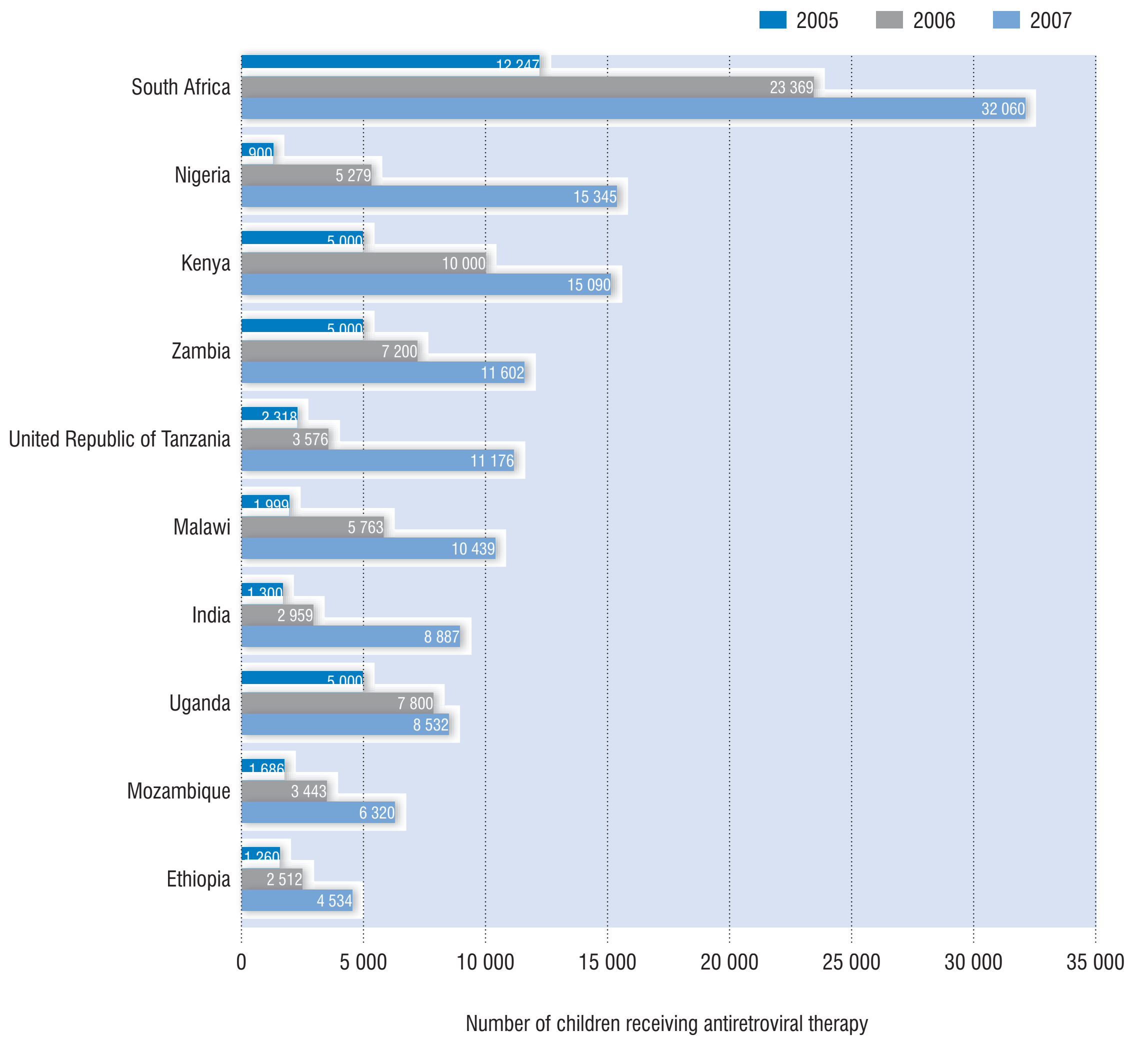


Fig. 5.13. Number of children (younger than 15 years) receiving antiretroviral therapy in the 10 countries with the highest estimated number of pregnant women living with HIV, 2005–2007



However, while tremendous progress has been made towards universal access to antiretroviral therapy for children in many countries, most children living with HIV who need antiretroviral therapy globally are still not receiving treatment, resulting in high rates of mortality among children younger than five years of age directly attributable to HIV. Efforts must continue to expand early infant diagnosis and the provision of treatment and care for children.

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6. STRENGTHENING HEALTH SYSTEMS AND HEALTH INFORMATION

Key findings

- Investing in the HIV response can strengthen health systems as a whole and catalyse more effective and responsive health care delivery systems.
- Many countries are adopting strategies such as task-shifting to address health worker shortages, which involves moving specific tasks from highly specialized health workers to less specialized workers.
- Globally, 18% of all reporting treatment sites experienced at least one stock-out of antiretroviral drugs in 2007, with stock-outs highest in Africa and Latin America.
- Programme managers and health care workers need better strategic health information to guide service delivery and improve the impact of interventions in resource-limited settings.

6.1 Strengthening health systems

Strengthening health systems to support the unprecedented scale-up of HIV prevention, treatment and care interventions requires careful stewardship and integrating HIV programmes with other areas of the health system. All health systems have to carry out some basic functions to meet their goals, regardless of how they are organized. WHO identifies six building blocks for a strong health system: service delivery; health workforce; health information; medical products, vaccines and technologies; and leadership and governance *(1)*. Each of these functions is essential to improving health outcomes and ensuring the greatest possible efficiency in health investment.

Health workforce

The health workforce continues to represent one of the most significant challenges in scaling up priority HIV interventions in low- and middle-income countries. *The world health report 2006 (2)* indicated a worldwide shortage of 4.3 million doctors, nurses and midwives, with sub-Saharan Africa alone experiencing a shortage of 1 million health care workers. Additional challenges related to the health workforce include migration, lack of skills and poor working environments *(3)*.

HIV and other diseases have had an enormous effect on human resources in many countries in sub-Saharan Africa, where morbidity, mortality and absenteeism have undermined an already overstretched health workforce *(4)*. Some studies have estimated that up to 20% of the health workforce may be lost due to HIV and related illnesses *(3)*. A recent anonymous survey of 595 health care workers in South Africa *(5)* found that the HIV prevalence among health workers was 15.9%, comparable to the national average HIV prevalence of 15.5% among adults. Such results are unlikely to be markedly different in other high-burden countries.

These and other studies have emphasized the need to give priority to providing HIV interventions, including antiretroviral therapy, to health workers. A recent survey on the effect of scaling up treatment on human resources in Malawi, for example, estimated that, for 1024 health care workers accessing antiretroviral therapy as of June 2006, an estimated 250 lives were saved one year after treatment initiation, which accounts for a gain of 1000 health worker–days per week at the national level. This is equivalent to the total estimated number of health worker–days per week required for providing antiretroviral therapy services at the national level *(6)*.

In 2007, WHO worked with several international partners and Member States to develop a plan to address the health workforce crisis with a focus on three interventions *(7)*:

- treat: provide a comprehensive package of HIV interventions to health care workers;
- train: including task-shifting to less specialized types of workers; and
- retain: including occupational health and safety, financial and non-financial incentives to remain in the health workforce and measures to address the migration of health care workers to the private sector or to higher-income countries.

One of the key elements of the train component is task-shifting, which entails moving specific tasks, where appropriate, from highly qualified health workers to other health workers. Task-shifting was used successfully in resource-limited settings before the HIV epidemic emerged to address shortages of physicians in resource-limited settings, and several studies have demonstrated that this strategy is not only cost-effective but that auxiliary staff perform some tasks better than fully trained health care workers do *(8)*.

In 2007, 28 of 73 low- and middle-income countries reported[1] having a policy on task-shifting to allow reorganization of tasks among health care workers and hiring non-professional workers. WHO, together with the United States President's Emergency Plan for AIDS Relief and UNAIDS, recently developed global recommendations and guidelines on task-shifting, and launched them at the first-ever International Conference on Task Shifting held in January 2008 *(9)*. The recommendations provide overall guidance to countries that are considering adopting or further expanding a task-shifting approach to strengthening the health workforce.

Uptake of task-shifting in the delivery of HIV services has demonstrated beneficial results. A recent study in South Africa *(10)* found that, after six months of follow-up, outcomes such as viral suppression, adherence and retention of patients at sites without doctors were similar to those at sites with doctors.

Favourable outcomes of the task-shifting approach have also been documented in Haiti and Rwanda, where Partners in Health, a nongovernmental organization, delivers HIV treatment and care services using a model that shifts tasks towards nurses and community health workers. In Partners in Health sites in Haiti, where doctors exclusively perform only 2% of all tasks, the 12-month survival of the people ever started on antiretroviral therapy was comparable to survival outcomes in other resource-limited settings. The drop-out rates were less than 5% in Partners in Health sites in both countries, which has been attributed to the support of community health workers who accompany people through their treatment with daily supervision and monitoring. Nurses and doctors accepted task-shifting as an approach, and

1 Data reported to WHO in response to the annual questionnaire for monitoring the health sector response to HIV/AIDS, 2007.

community health workers were well respected. At all levels of the health care system, staff reported that they felt capable of taking on new or more complicated tasks with adequate training, materials and remuneration *(11)*. Similar results have also been reported in Uganda *(12)*.

Procurement and supply management

In addition to the human resources crisis, many health systems continue to face weak procurement and supply management systems that result in frequent stock-outs of antiretroviral drugs and other essential commodities *(13)*. Among 66 low- and middle-income countries reporting data on stock-outs of antiretroviral drugs,[2] 41 countries had not experienced any stock-out of antiretroviral drugs in 2007. The remaining 25 countries reported having experienced one or more episode of stock-out of antiretroviral drugs.

Globally, 18% of all reporting treatment sites had experienced at least one stock-out of antiretroviral drugs in 2007. However, countries in Africa and Latin America reported higher proportions of treatment sites experiencing stock-outs of antiretroviral drugs than other regions.[3]

To help countries to strengthen their procurement and supply management systems, the United States President's Emergency Plan for AIDS Relief funded the Supply Chain Management System, which brings together multiple stakeholders to procure essential medicines and other supplies at affordable prices, to build and strengthen reliable supply chain systems, and to foster coordination in this area among partners (Box 6.1).

Box 6.1. Strengthening supply chain management in Guyana and Zimbabwe

Guyana

AIDS is the leading cause of death for people between the ages of 25 and 44 in Guyana, and the government has given priority to timely access to treatment and care for people living with HIV. Guyana's supply chain is largely centralized, with a unit within the Ministry of Health to manage the procurement and distribution of all public-sector health commodities.

To increase warehousing capacity, the Ministry of Health, with the support of the Supply Chain Management System, opened a new model storage facility for HIV medicines and supplies in November 2007. The new facility provides a secure, temperature-controlled environment for storing antiretroviral drugs and other commodities used in HIV testing, care and treatment. A warehouse management system was also launched, incorporating hand-held and radio frequency technology into the new warehouse. Previous warehouse inventory systems were prone to inaccuracy, resulting in inefficiency and expired products. The new system has already greatly improved inventory management.

In 2007, the Supply Chain Management System also worked with other partner organizations to develop a national forecast of antiretroviral drugs, other essential medicines and test kits needed over the coming year and trained technical staff from the Ministry of Health and partner organizations in forecasting techniques. This will help to further strengthen the inventory systems and ensure that potential shortages of essential health commodities are averted.

Zimbabwe

In Zimbabwe, coordination among key stakeholders has been key to success in scaling up antiretroviral therapy programmes in the current unstable economic environment. To strengthen procurement and supply management systems, the Supply Chain Management System has provided support to the National Antiretroviral Treatment Partnership Forum, a programme of the Ministry of Health and Child Welfare that coordinates the activities of government agencies with donor organizations.

Zimbabwe is reducing stock-outs of key HIV commodities through an innovative programme first developed for its family planning programmes. In partnership with the Supply Chain Management System and the United States Agency for International Development, the Ministry of Health and Child Welfare and the Zimbabwe National Family Planning Council piloted a project to add HIV rapid test kits and nevirapine for preventing mother-to-child transmission of HIV to an existing distribution system that delivers condoms and contraceptives to health facilities in two provinces. Delivery team leaders carry commonly used commodities in large trucks – or "moving warehouses" – to health facilities, checking remaining supplies and leaving behind what is needed to replenish stocks. According to an evaluation conducted in January 2008, stock-out rates fell by 19% for rapid test kits and by 37% for nevirapine in one province alone. As a result, this programme was approved for nationwide rollout. The Supply Chain Management System is training local staff in the necessary skills and tools to do their own quantification and national supply management.

Source: Where we work: country highlights [web site] *(14)*.

2 Data reported to WHO in response to the annual questionnaire for monitoring the health sector response to HIV/AIDS, 2007.

3 Data reported to WHO in response to the annual questionnaire for monitoring the health sector response to HIV/AIDS, 2007.

HIV response and strengthening health systems

There has been significant debate in recent years about vertical (disease-specific) programming versus horizontal (health systems) investments. Some concern has been raised that funding for vertical programmes, such as those directed at providing HIV prevention, treatment and care services, distort the health system by diverting scarce resources in low- and middle-income countries away from other areas of the health system and complicating budgeting and planning processes for recipient countries *(15–17)*. In response, several stakeholders have noted the false dichotomy of vertical HIV programmes versus horizontal investment in health systems as if they were mutually exclusive. They suggest that, although concerns about distorting health systems are valid, effective design of disease-specific programmes and integration with other components of the health system can leverage disease-focused investment to strengthen other areas of underresourced health systems *(18,19)*.

The debate has stimulated significant discussion and evaluation on how HIV programme delivery affects the health systems of low- and middle-income countries. Several recent analyses of HIV programme implementation have provided new information on this, suggesting that investment in priority HIV interventions has effects throughout the health system, such as upgrading laboratory and clinical infrastructure *(20)*. Additional analyses provide the conceptual framework for how HIV programme delivery can catalyse more effective and responsive health care delivery systems (Box 6.2) *(21)*.

Box 6.2. Strengthening Cambodia's health system with HIV investment

In 2003, Cambodia released a plan to scale up the provision of a continuum of care package for providing integrated care and treatment to people living with HIV. The services provided through this plan include:

- voluntary testing and counselling;
- community-based services, including home-based care and support groups for people living with HIV;
- health facility–based care, including treatment for opportunistic infections, antiretroviral therapy for adults and children and laboratory and pharmacy services; and
- supportive networks of people living with HIV or Mond Mith Chouy Mith (centres for friends help friends activities).

Cambodia's National Center for HIV/AIDS, Dermatology and Sexually Transmitted Infections is leading the rollout of the plan from a single operational district in 2003 to an anticipated 40 of 68 operational districts by 2010.

One of the critical components of Cambodia's plan was coordinating the activities of government, nongovernmental organizations and international partners in delivering HIV services. This was particularly challenging given the number of different nongovernmental organizations that had been providing HIV services before any government services existed.

Another important component of the plan was providing additional training and incentives to health workers to address the increased workload involved in treating people living with HIV.

A case study was submitted in 2007 to provide a snapshot of the continuum of care in mid-scale-up, paying particular attention to the potential for HIV interventions to contribute to strengthening the health system. Evidence for broader strengthening of the health system included:

- improved management techniques developed for the national HIV plan and picked up by other parts of the health care system;
- increased technical abilities of clinicians to treat people who do not have HIV infection;
- increased utilization of other hospital services as a result of positive feedback within the community regarding the standard of care; and
- improved general laboratory and pharmacy operations.

Evidence for these effects in strengthening the health system was most evident in the operational district that first began implementing the plan, where training, equipment and renovations built general system capacity as much as HIV-specific care.

In addition, staff and resources from paediatric HIV services are also providing services to all children in need of care, leading to an improved quality of general paediatric care at these 22 hospitals. The National Center for HIV/AIDS, Dermatology and Sexually Transmitted Infections has initiated an integrated laboratory initiative to pool staff and laboratory equipment from the various vertical programmes to optimize laboratory output at the district hospital level.

Sources: *The continuum of care for people living with HIV/AIDS in Cambodia: linkages and strengthening in the public health system – a case study (22)* and the WHO Country Office for Cambodia.

6.2 Integrating HIV services with primary health care

Several studies have indicated that HIV services need to be integrated with other health services to maximize the impact of investment in HIV interventions *(23)*.

WHO has developed integrated tools and training materials health workers can use in delivering health services to people living with HIV. The Integrated Management of Adolescent and Adult Illness (IMAI) approach was built on the model of the Integrated Management of Childhood Illness (IMCI), which has been successfully implemented in countries since 1999. Rather than separate tools from different disease programmes, the IMAI and IMCI tools provide health workers with an integrated case management approach to managing multiple health problems while delivering priority prevention interventions.

Both approaches support a decentralized model of scaling up of health services that optimizes the use of human resources and fosters networks of health care provision at the district level. These district networks link communities, health centres and hospitals through systems of referral, consultation and mentoring and facilitate patient self-management. Such approaches also enable laboratory and clinical infrastructure and supply management to be strengthened and have the potential to strengthen the broader health system (Box 6.3).

Box 6.3. Integrated service provision in the United Republic of Tanzania

The United Republic of Tanzania has extensively implemented the IMCI strategy for several years. A large intervention study demonstrated that the integrated approach to delivering priority treatment and prevention interventions for children through IMCI resulted in a 13% greater reduction in child mortality than with using the same per capita resources for children's health delivered in a disintegrated fashion with disease-specific interventions *(24)*.

Building on the IMCI approach, the United Republic of Tanzania adapted the IMAI acute care, chronic HIV care and palliative care tools to use as the national curricula to train health care workers and support the decentralization of HIV services to the health centre level. Until mid-2006, antiretroviral therapy was delivered predominantly through care and treatment centres in 200 hospitals. In 2007, the Ministry of Health and Social Welfare trained care and treatment teams from 500 primary health facilities using the IMAI tools adapted to the United Republic of Tanzania to expand the delivery of antiretroviral therapy. The number of people receiving antiretroviral therapy increased from 46 124 people in October 2006 to 135 696 by December 2007. There are plans to train teams from an additional 500 primary health care facilities in 2008.

The Ministry of Health and Social Welfare has also reallocated the work of its implementing partners to strengthen the capacity of regional and district teams to manage HIV services. This policy of regionalization, combined with support for standardized national guidelines and curricula for the hospital and health centre level and active decentralization, are key to the further expansion of HIV services within a strengthened health system.

6.3 Investing in health information

Strategic information about the HIV epidemic at the local and national levels is essential for countries to guide planning, decision-making, implementation and accountability of their health sector response to HIV.

Surveillance

Knowing the HIV epidemic in a country is a prerequisite to designing an appropriate response. In 2000, UNAIDS and WHO launched the second-generation HIV surveillance method to improve HIV surveillance *(25)*. This strategy promotes the adaptation of information systems to the country-specific characteristics of the HIV epidemic and links various sources of information, including HIV prevalence in different population groups, information on sexual risk behaviour, reporting of AIDS cases and other sources of data. Most countries have adopted this approach to strengthen HIV surveillance, although the quality of surveillance and trends has varied over time.

A recent evaluation of the frequency and timeliness of data collection, the appropriateness of systems used and consistency of surveillance sites provided useful insights into the quality of HIV surveillance practice. Globally, among 137 low- and middle-income countries, 56 countries had fully implemented surveillance systems, 32 had partly implemented them and the remaining 49 countries had poor performing systems. This represents a slight increase in the quality of surveillance systems globally over the past few years, especially in countries with generalized epidemics *(26)*.

Since new HIV testing technologies – such as rapid tests and dried blood spot sampling – have become available, many countries have conducted nationally representative surveys to estimate HIV prevalence. National population surveys can provide more accurate and better-quality information on the levels of HIV infection in both urban and rural settings than estimates derived from sentinel surveillance. They also provide data on the age and sex distribution of the people living with HIV. During the past five years, about 30 national population-based surveys have been carried out, mostly in sub-Saharan Africa. Data from population-based surveys enable greater accuracy in generating global and regional estimates of the HIV epidemic.

Knowledge of the HIV epidemic in a country must include understanding the expected numbers and sources of new infections. WHO and UNAIDS are working with countries in eastern, western and southern Africa to generate better estimates of HIV incidence and inform programme planning. The study, which uses a modelling technique called modes of transmission, estimates the expected number of people newly infected per year based on the current distribution of infection and patterns of risk within a population *(27)*.

Monitoring and evaluation

Countries have made significant efforts and progress in strengthening monitoring and evaluation of their HIV programmes in recent years, as a result of increasing investment in the HIV response as well as pressure from multilateral and bilateral donors for greater accountability. Countries are better prepared to collect, use and analyse data to monitor and improve programme performance. Key stakeholders have also made efforts to improve coordination for monitoring and evaluation activities in accordance with the “three ones” principles *(28)*.

More and more countries recognize the need to strengthen systems to monitor the health-sector response to HIV/AIDS. As of December 2007, 67 low- and middle-income countries have developed or are developing a national monitoring and evaluation plan for the HIV response in the health sector. Most low- and middle-income countries (143 of 149 reporting countries) provided data for monitoring progress in the health sector towards universal access in 2007. An increasing number of countries are also able to monitor access to priority HIV interventions. For example, 131 low- and middle-income countries reported data on the number of people receiving antiretroviral therapy in 2007. However, the availability of detailed data, such as data disaggregated by sex and by age, is more limited. In 2007, only 101 countries were able to provide data on antiretroviral therapy disaggregated by sex and/or by age. Limited data are available from high-income countries. Nine of 44 high-income countries reported data on the number of people receiving antiretroviral therapy in 2007.

More progress is needed to ensure the availability of high-quality information and to make the best use of this information in developing national programmes, monitoring the impact of interventions and ensuring accountability. Regularly collecting and making available high-quality data on the impact and outcomes of key interventions is a pressing challenge for the future.

Although evidence is growing of the positive impact of scaling up antiretroviral therapy for individuals and communities, the high rates of loss to follow-up and early mortality among people initiating treatment raise concerns. Countries need the capacity to conduct cohort analyses and require appropriate tools, including electronic systems, to collect, compile and analyse data to monitor the outcome and impact of interventions and to take decisions for preventing undesirable results (Box 6.4).

At the global level, a high level of commitment from countries and donors will be sustainable only if evidence indicates that the large investments in the HIV response are mitigating morbidity and mortality and preventing new infections.

Box 6.4. Investing in a patient monitoring system for Ethiopia

Ethiopia developed its first National Monitoring and Evaluation Framework on HIV/AIDS in 2003. The national patient monitoring system for antiretroviral therapy was adopted in 2005 with its own package of data collection and reporting instruments. The patient monitoring system for antiretroviral therapy is used in all the 329 health facilities (119 hospitals and 210 health centres) currently delivering antiretroviral therapy. All health providers who provide antiretroviral therapy services are trained to use the national monitoring system for antiretroviral therapy, and the training is incorporated into the IMAI training modules.

To roll out the implementation of the patient monitoring system, Ethiopia trained and deployed data clerks to all health facilities providing antiretroviral therapy services. Data are collected using a paper-based system at the health facility level and compiled in an electronic database at the regional and national levels. Regional health information desks have data managers and monitoring and evaluation officers, with a central department responsible for coordinating monitoring and evaluation activities.

The national monitoring and evaluation system requires that all sites providing antiretroviral therapy services report patient information to their next administrative level on a monthly basis, with data disaggregated by age, sex and treatment regimen. Treatment outcome indicators begin to be reported six months after antiretroviral therapy is initiated and continue to be reported as patients reach 12 months, followed by each successive year on treatment. A total of 1129 testing and counselling sites and 502 sites providing interventions to prevent mother-to-child transmission follow the same procedures but report on a quarterly basis to the next administrative level.

National- and regional-level information on antiretroviral therapy is compiled, validated and disseminated monthly, and voluntary counselling and testing services and services to prevent mother-to-child transmission report nationally on a quarterly basis. National reports with aggregate data are disseminated electronically to key stakeholders and partners. The patient monitoring system has also provided the Ministry of Health and its partners with a rich source of research data to evaluate its national programme, for example, to evaluate how antiretroviral therapy affects morbidity and mortality in Ethiopia.

As the country's antiretroviral therapy programme is scaled up, the current paper-based information system will become an increasing challenge. It is labour-intensive and takes up a large amount of space. It is subject to errors, which could compromise the quality of data. There are also concerns about ensuring the privacy and confidentiality of individual records. The heavy workload of both health care workers and data entry clerks creates difficulty in ensuring timely follow-up of patients who miss appointments or other events that could signal treatment interruption. Increased capacity is needed to sustain the monitoring of patients, especially at the *woreda* level, the lowest programme management level in the Ethiopian health care system.

Research

Comprehensive strategic health information includes operational research to guide the implementation and scale-up of HIV prevention, care and treatment programmes. Key stakeholders have acknowledged the importance of operational research to fill gaps in knowledge and to ensure evidence-based implementation of health-sector interventions. The Sydney Declaration launched at the 4th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention in July 2007 calls for 10% of HIV/AIDS funding to be allocated for research *(29)*.

In March 2008, WHO and partners organized an international consultation to define priority areas of research to guide implementation of the public health approach to delivering care and treatment in resource-limited settings. The consultation considered four main areas of research: laboratory services, antiretroviral therapy, non–antiretroviral therapy care and health systems. The recommendations from the consultation will be published during 2008.

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7. TOWARDS UNIVERSAL ACCESS: THE WAY FORWARD

Overall, progress in scaling up the health sector response to meet universal access targets for HIV prevention, treatment, care and support has accelerated. Key health sector interventions, such as antiretroviral therapy, prevention of mother-to-child transmission and testing and counselling, are increasingly available and accessible. Stronger national commitment, financial investment and technical guidance along with multilateral, bilateral and private sector initiatives have contributed to this progress.

Nevertheless, even at the current pace of scale-up, few countries are on course to meet universal access targets by 2010 or those laid out in the Millennium Development Goals by 2015. Although the gains in scaling up treatment are impressive, the annual number of new HIV infections continues to outstrip the annual additional number of people who receive treatment. In 2007, about 2.5 million people were newly infected with HIV, but less than 1 million more people received antiretroviral therapy compared with the end of 2006.

Predictable and sustainable funding, continuing political commitment, better coordination among stakeholders and additional research are required to address the formidable challenges that face the health sector. Proven HIV prevention measures, coupled with increased testing and counselling services, must be made more widely available to prevent new infections, and efforts must continue to expand access to treatment, care and support services for people living with HIV.

To achieve universal access goals, countries and partners must focus on the following priority areas in the health sector.

1. Strengthening the role of the health sector in HIV prevention

1.A Scaling up implementation of proven HIV prevention interventions

The health sector can and must play a greater role in scaling up and sustaining proven HIV prevention interventions, such as condom use and harm reduction strategies. HIV prevention must be an integral part of services for reproductive health, family planning and managing sexually transmitted infections.

Population groups at high risk of HIV infection, such as sex workers, injecting drug users, men who have sex with men and prisoners, continue to face barriers to accessing health services in many countries. The health sector must intensify its efforts to make evidence-based HIV prevention services available and accessible to these population groups.

The health sector also needs to ensure better follow-up of people diagnosed with HIV to ensure that they have access to services to prevent opportunistic infections and optimize their own health and to prevent further transmission.

1.B Intensifying interventions in health care settings

Patients and health care workers continue to be at risk of HIV infection in health care settings. Countries must ensure that universal precautions against HIV infection, including universal, quality-assured screening of blood supplies and injection safety, are implemented.

Countries must also expand the availability of post-exposure prophylaxis in health care settings for occupational and non-occupational exposure to HIV and provide appropriate training to service providers to effectively assess the risk of exposure and to manage post-exposure follow-up.

Infection control strategies aimed at preventing the spread of TB require greater attention. These include developing TB infection control plans, "fast-tracking" coughing patients, assuring rapid TB diagnosis and improving ventilation.

1.C Expanding male circumcision programmes

Male circumcision has been proven to reduce the risk of heterosexually transmitted HIV infection among men in countries with a high rate of heterosexual transmission and a low prevalence of male circumcision. Expanding male circumcision programmes in such settings requires that this intervention be undertaken by trained staff, integrated into a comprehensive prevention strategy and accompanied by accurate information on the limits of its protective effect.

2. Overcoming obstacles to increase knowledge of HIV status

Universal access will not be achieved if people do not know their HIV status. Provider-initiated testing and counselling in health care settings presents an opportunity to increase testing and counselling coverage and to ensure appropriate referral to other health services. Countries must also continue to promote client-initiated approaches to HIV testing and counselling and extend outreach to population groups at risk and to people with limited access to health facilities.

3. Strengthening and sustaining efforts to scale up HIV treatment and care

3.A Capitalizing on recent progress in scaling up access to treatment

Many low- and middle-income countries have expanded access to antiretroviral therapy for adults and children, especially in sub-Saharan Africa. However, the number of people receiving antiretroviral therapy continues to fall short of the need.

To scale up further, national treatment programmes must continue to provide life-long access to people currently receiving antiretroviral therapy and to deliver services to additional people in need. This includes people who are more difficult to reach, such as rural and populations most at risk. Further, with increased knowledge of HIV status, more people with HIV who are eligible to receive antiretroviral therapy will seek treatment services. International partners need to support countries in scaling up access to treatment through a public health approach based on simplified clinical decision-making, standardized regimens and decentralized and integrated delivery of services.

3.B Ensuring timely access to treatment and high levels of retention

Many adults and children eligible for treatment are diagnosed late in disease progression, and many either die before being able to access antiretroviral therapy or receive antiretroviral therapy too late. Countries must intensify efforts to ensure that people are referred for appropriate clinical assessment following an HIV-positive diagnosis.

Poor retention in treatment programmes threatens to undermine the impact of scaling up antiretroviral therapy services and to increase drug resistance. Improved patient monitoring systems, adequate resources and the integration of treatment programmes with other health services are prerequisites to maximizing the impressive gains made in scaling up antiretroviral therapy.

As treatment programmes are expanded, additional research will be required to guide decisions on when to initiate treatment and the acceptability, efficacy and optimal use of first-line treatment regimens. Additional evidence is also needed on how the public health approach can integrate wider access to laboratory monitoring for people receiving antiretroviral therapy.

3.C Reducing the cost of second-line regimens

Although the cost of first-line antiretroviral drug regimens has declined as a result of efforts by bilateral and multilateral partners, the cost of second-line drug regimens remains high. The cost of second-line regimens must be reduced as scale-up efforts continue, since increasing numbers of people may develop resistance or toxicity related to first-line regimens.

3.D Enhancing collaboration to respond to the dual epidemic of TB and HIV

Urgent action and strong political support are needed to prevent, diagnose and treat TB associated with HIV and avoid the emergence of multi-drug resistant and extensively drug-resistant TB. All national programmes should give greater priority to adopting and implementing WHO's policy on collaborative TB/HIV activities. Higher rates of HIV testing and counselling of people with TB are necessary to increase access to antiretroviral therapy and co-trimoxazole prophylaxis for people living with HIV and TB. The "three Is" – isoniazid preventive therapy, intensified case-finding for active TB and infection control for TB – are vital to expanding the prevention and treatment of TB among people living with HIV.

3.E Scaling up access to care, including co-trimoxazole prophylaxis

Countries must make co-trimoxazole prophylaxis available for adults, children and HIV-exposed infants. Co-trimoxazole prophylaxis is safe and one of the most cost-effective interventions for people living with HIV in resource-limited settings. However implementation has been slow, especially in rural areas. These policies should be implemented more widely to ensure that more adults and children enrolled in HIV care have sustained access to co-trimoxazole prophylaxis.

3.F Developing comprehensive strategies to prevent, diagnose and treat viral hepatitis and HIV coinfection

HIV, hepatitis B and hepatitis C coinfection represent a substantial public health threat, particularly in Eastern Europe and Central Asia, with high rates of HIV transmission through injecting drug use and of high levels of hepatitis C. Considering the great anticipated impact of HIV and hepatitis B and C coinfection in the coming years, countries must devote more resources to gauging the magnitude of

disease associated with hepatitis B and hepatitis C among people living with HIV and expand access to diagnosis, prevention and treatment strategies and policies for hepatitis B and hepatitis C control. This includes measures such as improving access to diagnostic tests, implementing harm reduction programmes and blood safety policies, promoting hepatitis B immunization and providing access to anti–hepatitis B and anti–hepatitis C therapies.

4. Accelerating access to HIV prevention, treatment and care for women and children

4.A Strengthening links with maternal, child and reproductive health services

Health care settings such as maternal, newborn and child health services and sexual and reproductive health services, including family planning, are vital points of contact in providing HIV services to women and children. Strengthening operational links between these services will enable health care providers to reinforce HIV prevention and care for women and children, including increasing HIV testing and counselling among pregnant women, early HIV diagnosis among children born to mothers living with HIV and antiretroviral therapy, care and support to women and children.

The high rates of antenatal care coverage in many high-prevalence countries provide an excellent opportunity to expand provider-initiated testing and counselling as a part of comprehensive antenatal screening. Health workers need to be adequately trained and supervised to increase the number of pregnant women who know their HIV status and who can benefit from the necessary interventions.

4.B Scaling up the provision of efficacious antiretroviral prophylaxis regimens

Global progress in providing access to antiretroviral medicines to pregnant women living with HIV to prevent HIV transmission to their child has been encouraging. Countries must continue efforts to scale up access to antiretroviral prophylaxis with regimens that have been shown to be more efficacious than single-dose nevirapine.

4.C Ensuring access to antiretroviral therapy for pregnant women living with HIV

Although access to antiretroviral medicines to prevent mother-to-child transmission is increasing, all pregnant women living with HIV must also be assessed for their eligibility to receive antiretroviral therapy for their own health. Identifying and treating women in need of antiretroviral therapy will also reduce transmission and prevent orphanhood.

4.D Expanding infant diagnosis and the availability of care and treatment for children

The availability of virological testing for infants and the timely reporting of results need to be expanded to ensure that more children receive the necessary care and treatment. Countries must also continue to expand the availability of co-trimoxazole prophylaxis to reduce morbidity and mortality among infants and children living with or exposed to HIV. Further, mothers living with HIV must receive appropriate information and counselling regarding optimal and safe infant feeding practices.

5. Implementing strategies to overcome health system weaknesses

Investing in HIV programmes can strengthen health systems if HIV interventions are appropriately integrated with other health services and aligned with national planning processes for the health sector as a whole. Greater attention must be paid to integrating HIV services into primary health care as part of managing chronic diseases while ensuring that the availability of treatment and care for people living with HIV is not compromised.

Countries must invest in building human resource capacity in the health sector by training health workers, decentralizing health service delivery, task-shifting and other approaches to addressing health worker shortages.

Countries must also develop strategies for strengthening procurement and supply management systems to ensure uninterrupted access to antiretroviral drugs. Additional investment and planning are needed to strengthen laboratory infrastructure to provide greater access to diagnostics for HIV testing and patient monitoring.

6. Improving the generation and use of strategic information to guide the health sector response

The availability of epidemiological data and information on access to priority health sector interventions is gradually improving. However, more investment and capacity are needed to generate and use quality information in several critical areas. These include:

- HIV descriptive epidemiology, including HIV incidence;
- the availability and coverage of essential health sector interventions such as HIV testing and counselling, management of sexually transmitted infections, care and access to health services for populations most at risk of HIV infection; and
- the impact and outcome of priority HIV interventions on mortality, HIV incidence, HIV prevalence and strengthening the health system.

Several high-priority operational research questions need to be answered to ensure the most effective delivery of health sector interventions using a public health approach. Increased human resources, research infrastructure and technical guidance will be necessary to implement operational research.

Annex 1. Estimated numbers of people receiving and needing antiretroviral therapy and coverage percentages, 2006-2007

Low- and middle-income countries[a]	Reported number of people receiving antiretroviral therapy, 2006[b]	Month and year of report[c]	Reported number of people receiving antiretroviral therapy, 2007[b]	Month and year of report[c]	Average monthly increase in the number of people receiving antiretroviral therapy in the last year[d]	Estimated number of people receiving antiretroviral therapy, December 2007[b]			Estimated number of people needing antiretroviral therapy based on UNAIDS/WHO methodology, 2007[e]			Estimated antiretroviral therapy coverage, December 2007[f]			Estimated number of people needing antiretroviral therapy based on country report, 2007[e]
						Estimate	Low estimate	High estimate	Estimate	Low estimate	High estimate	Estimate	Low estimate	High estimate	
Afghanistan	0	Sep 06	0	Dec 07	0	0			...			...			...
Albania	45	Oct 06	74	Dec 07	2	<100		<100	...			...			...
Algeria	588	Nov 06	929	Oct 07	32	1 000	900	1 000	4 900	2 700	10 000	20%	10%	36%	...
Angola	6 514 [g]	Dec 06	11 540 [g]	Dec 07	419	12 000	10 000	13 000	47 000	33 000	110 000	25%	11%	35%	45 287
Argentina	35 211	Dec 06	38 242	Dec 07	253	38 000	36 000	40 000	53 000	38 000	67 000	73%	57%	>95%	38 242
Armenia	47	Dec 06	78	Dec 07	3	<100		<100	660	<500	1 000	12%	8%	17%	860
Azerbaijan	7	Dec 06	81	Dec 07	6	<100		<100	580	<500	1 300	14%	6%	24%	...
Bangladesh	53	Sep 06	178	Dec 07	10	<200		<200	2 400	1 500	4 000	7%	4%	12%	1 125
Belarus	638	Dec 06	884	Dec 07	21	900	800	1 000	4 300	3 000	6 200	20%	14%	29%	1 210
Belize	381	Sep 06	558	Dec 07	12	600	500	600	1 100	740	1 700	49%	32%	76%	...
Benin	7 417	Nov 06	9 765	Dec 07	181	9 800	8 800	11 000	20 000	16 000	24 000	49%	41%	60%	21 706
Bhutan	19	Dec 06	18	Dec 07	<1	<100		<100	...			...			...
Bolivia	382	Dec 06	496	Dec 07	10	<500		500	2 300	1 700	3 100	22%	16%	30%	1 055
Bosnia and Herzegovina	19	Dec 06	30	Dec 07	1	<100		<100	...			...			30
Botswana	79 490 [g]	Dec 06	92 932 [g]	Dec 07	1 120	93 000	86 000	99 000	120 000	100 000	130 000	79%	69%	91%	110 000
Brazil	174 270	Dec 06	181 000	Dec 07	561	181 000	172 000	190 000	230 000	190 000	260 000	80%	69%	>95%	...
Bulgaria	196	Dec 06	221	Dec 07	2	<500		<500	...			...			...
Burkina Faso	14 079	Dec 06	15 888	Sep 07	350	17 000	15 000	19 000	48 000	39 000	58 000	35%	29%	43%	...
Burundi	8 048	Dec 06	10 894	Dec 07	237	11 000	10 000	11 000	47 000	35 000	59 000	23%	18%	31%	23 532
Cambodia	20 131	Dec 06	26 664	Dec 07	544	27 000	25 000	28 000	40 000	34 000	47 000	67%	57%	80%	29 200
Cameroon	28 403	Dec 06	45 817	Dec 07	1 451	46 000	44 000	48 000	180 000	140 000	220 000	25%	21%	32%	86 453
Cape Verde	223	Dec 06	291	Dec 07	6	<500		<500	...			...			1 028
Central African Republic	2 782	Dec 06	8 037	Sep 07	518	9 600	9 100	10 000	45 000	36 000	54 000	21%	18%	27%	36 920
Chad	5 500	Dec 06	7 400	Dec 07	158	7 400	6 700	8 100	55 000	41 000	79 000	13%	9%	18%	21 000
Chile	7 782	Dec 06	10 223	Dec 07	203	10 000	9 200	11 000	12 000	9 100	16 000	82%	64%	>95%	9 023
China	31 140 [g]	Dec 06	35 112 [g]	Dec 07	331	35 000	33 000	37 000	190 000	120 000	290 000	19%	12%	29%	85 000
Colombia	17 540 [g]	Dec 06	...		*208*	21 000	15 000	26 000	54 000	39 000	78 000	38%	26%	53%	...
Comoros	5	Dec 06	7	Dec 07	<1	<100		<100	<100	<100	<100	...			8
Congo	3 186	Dec 06	4 716	Sep 07	80	5 000	3 700	6 200	29 000	23 000	35 000	17%	14%	21%	...
Cook Islands	...		...		...	...			...			...			...

Low- and middle-income countries[a]	Reported number of people receiving antiretroviral therapy, 2006[b]	Month and year of report[c]	Reported number of people receiving antiretroviral therapy, 2007[b]	Month and year of report[c]	Average monthly increase in the number of people receiving antiretroviral therapy in the last year[d]	Estimated number of people receiving antiretroviral therapy, December 2007[b]			Estimated number of people needing antiretroviral therapy based on UNAIDS/WHO methodology, 2007[e]			Estimated antiretroviral therapy coverage December 2007[f]			Estimated number of people needing antiretroviral therapy based on country report, 2007[e]
						Estimate	Low estimate	High estimate	Estimate	Low estimate	High estimate	Estimate	Low estimate	High estimate	
Costa Rica	2 866	Dec 06	2 952	Dec 07	7	3 000	2 700	3 200	2 800	1 600	4 600	>95%	64%	>95%	3 060
Côte d'Ivoire	36 348	Dec 06	46 007	Sep 07	1 935	52 000	49 000	54 000	190 000	150 000	230 000	28%	23%	35%	165 448
Croatia	291	Dec 06	310	Jun 07	2	<500		<500	...			...			...
Cuba	1 711	Dec 06	3 106	Dec 07	116	3 100	2 800	3 400	1 400	760	2 500	>95%	>95%	>95%	1 887
Democratic People's Republic of Korea	0	Dec 06	...		...	0			...			0%			...
Democratic Republic of the Congo	17 561	Dec 06	...		*947*	29 000	27 000	30 000	120 000	99 000	150 000	24%	20%	29%	347 490
Djibouti	578	Nov 06	705	Dec 07	9	700	700	800	4 500	3 300	5 900	16%	12%	21%	...
Dominica	37	Dec 06	39	Dec 07	<1	<100		<100	...			...			53
Dominican Republic	5 001	Dec 06	8 199	Dec 07	267	8 200	7 800	8 600	22 000	17 000	27 000	38%	31%	48%	...
Ecuador	1 700	Sep 06	3 214	Dec 07	101	3 200	2 900	3 500	7 600	4 500	13 000	42%	25%	71%	...
Egypt	205	Dec 06	209	Dec 07	<1	<500	<200	<500	2 200	1 600	3 100	9%	7%	13%	...
El Salvador	4 712	Dec 06	5 773	Dec 07	88	5 800	5 500	6 100	11 000	7 800	63 000	51%	9%	74%	4 840
Equatorial Guinea	396	Nov 06	859	Sep 07	42	1 000	1 000	1 200	3 100	2 300	4 300	31%	23%	43%	...
Eritrea	1 175	Dec 06	1 301	Dec 07	11	1 300	1 200	1 400	10 000	6 700	15 000	13%	9%	20%	12 940
Ethiopia	53 720	Dec 06	90 212	Dec 07	3 041	90 000	86 000	95 000	310 000	250 000	370 000	29%	25%	36%	260 000
Fiji	...		28	Dec 07	...	<100		<100	<200	<100	<200	...			...
Gabon	5 278	Dec 06	6 373	Dec 07	91	6 400	6 100	6 700	15 000	11 000	21 000	42%	30%	60%	14 598
Gambia	392	Sep 06	423	Sep 07	3	<500		<500	2 300	1 200	3 700	18%	12%	37%	4 787
Georgia	267	Dec 06	334	Nov 07	5	<500		<500	<500	<200	<500	...			476
Ghana	9 420	Nov 06	13 357	Dec 07	303	13 000	13 000	14 000	87 000	69 000	110 000	15%	13%	19%	74 060
Grenada	33	Dec 06	47	Dec 07	1	<100		<100	...			...			129
Guatemala	6 030	Dec 06	7 812	Dec 07	149	7 800	7 400	8 200	21 000	15 000	28 000	37%	28%	51%	11 113
Guinea	4 699	Dec 06	5 228	Sep 07	144	5 700	5 100	6 200	21 000	15 000	27 000	27%	21%	37%	23 250
Guinea-Bissau	349	Dec 06	890	Dec 07	45	900	800	1 000	4 400	2 900	6 600	20%	13%	30%	3 171
Guyana	1 569	Dec 06	1 965	Dec 07	33	2 000	1 900	2 100	4 300	3 200	6 000	45%	33%	61%	3 240
Haiti	8 796	Dec 06	14 514	Dec 07	477	15 000	14 000	15 000	36 000	29 000	43 000	41%	33%	51%	...
Honduras	4 674	Dec 06	5 580	Dec 07	76	5 600	5 000	6 100	12 000	7 900	19 000	47%	29%	71%	9 916
Hungary	412	Dec 06	452	Dec 07	3	<500		<500	2 000	1 200	3 600	22%	13%	38%	...
India	90 597 [g]	Dec 06	158 020[g,h]	Dec 07	5 619	158 000	138 000	178 000	... [i]			...			...
Indonesia	5 100	Dec 06	...		*122*	6 600	5 000	8 300	43 000	23 000	84 000	15%	8%	28%	...
Iran (Islamic Republic of)	522	Sep 06	829	Aug 07	28	900	900	1 000	19 000	13 000	26 000	5%	4%	7%	8 730
Iraq	0	Jun 06	0	Dec 07	0	0			...			...			...

Jamaica	2 633	Dec 06	3 637	Dec 07	84	3 600	3 300	4 000	8 500	6 000	11 000	43%	32%	60%	6 000
Jordan	45	Sep 06	53	Dec 07	1	<100		<100	...			…			…
Kazakhstan	326	Dec 06	442	Dec 07	10	<500		<500	1 900	1 200	3 200	23%	14%	36%	1 078
Kenya	125 026 [g]	Dec 06	177 000 [g]	Dec 07	4 331	177 000	166 000	188 000	470 000 [i]	370 000	570 000	38%	31%	48%	407 000
Kiribati	…		5	Dec 07	<1	<100		<100	...			…			…
Kyrgyzstan	47	Dec 06	87	Dec 07	3	<100		<100	610	<500	1 100	14%	8%	26%	345
Lao People's Democratic Republic	479	Dec 06	700	Dec 07	18	700	500	900	690	<200	1 200	>95%	59%	>95%	…
Latvia	301	Dec 06	323	May 07	4	<500		<500	2 200	1 500	3 400	15%	9%	22%	763
Lebanon	213	Dec 06	246	Dec 07	3	<500		<500	940	550	2 300	26%	11%	45%	432
Lesotho	14 579	Aug 06	21 710	Dec 07	446	22 000	20 000	24 000	85 000	66 000	100 000	26%	21%	33%	84 791
Liberia	715	Sep 06	1 414	Dec 07	47	1 400	1 300	1 600	8 500	6 100	17 000	17%	9%	23%	…
Libyan Arab Jamahiriya	450	Dec 05	1 000	Dec 07	23	1 000	900	1 100	...			…			…
Lithuania	75	Dec 06	98	Dec 07	2	<100		<200	550	<500	1 200	18%	8%	31%	311
Madagascar	89	Nov 06	138	Dec 07	3	<200		<200	3 200	2 000	5 400	4%	3%	7%	1 206
Malawi	59 980 [g]	Dec 06	100 649 [g]	Dec 07	3 389	101 000	96 000	106 000	290 000	240 000	340 000	35%	29%	42%	252 720
Malaysia	2 700	<05	6 590	Oct 07	86	6 800	6 100	7 400	20 000	14 000	28 000	35%	24%	49%	…
Maldives	1	Dec 06	…		*0*	<100		<100	<100	<100	<100	…			…
Mali	11 508	Dec 06	12 172	Nov 07	226	12 000	12 000	13 000	30 000	24 000	38 000	41%	32%	51%	31 198
Marshall Islands	…		1	Dec 07	<1	<100		<100	...			…			…
Mauritania	256	Dec 06	839	Dec 07	49	800	800	900	3 600	2 100	6 300	23%	13%	40%	1 627
Mauritius	243	Dec 06	321	Dec 07	17	<500		<500	1 500	1 000	2 400	22%	14%	32%	1 200
Mexico	39 295	Dec 06	…		*313*	43 000	32 000	54 000	76 000	54 000	110 000	57%	40%	80%	…
Micronesia (Federated States of)	…		1	Dec 07	<1	<100		<100	...			…			…
Moldova	262	Dec 06	464	Dec 07	17	<500		<500	800	540	1 100	58%	43%	86%	856
Mongolia	2	Nov 06	3	Dec 07	<1	<100		<100	<100	<100	<100	…			26
Montenegro	26	Dec 06	…		*0*	<100		<100	...			…			…
Morocco	1 370	Dec 06	1 648	Dec 07	23	1 600	1 500	1 800	5 300	3 700	7 900	31%	21%	44%	2 230
Mozambique	37 133	Oct 06	85 822	Nov 07	3 745	90 000	85 000	94 000	370 000	290 000	460 000	24%	20%	31%	294 986
Myanmar	4 845	Sep 06	11 100	Dec 07	416	11 000	10 000	12 000	76 000	55 000	100 000	15%	11%	20%	…
Namibia	33 593	Dec 06	52 316	Dec 07	1 394	52 000	50 000	55 000	59 000	48 000	72 000	88%	73%	>95%	…
Nauru	…		…		…	…			...			…			…
Nepal	522	Nov 06	1 240	Sep 07	64	1 400	1 300	1 600	20 000	13 000	30 000	7%	5%	11%	19 200
Nicaragua	387	Dec 06	522	Dec 07	11	500	<500	600	1 700	1 200	4 700	30%	11%	43%	1 233
Niger	1 168	Dec 06	1 474	Oct 07	31	1 500	1 500	1 600	16 000	12 000	22 000	10%	7%	13%	8 929
Nigeria	95 008 [g]	Dec 06	145 392 [g]	Sep 07	7 434	198 000	144 000	252 000	750 000	550 000	1 100 000	26%	17%	36%	…
Niue	…		…		…	…			...			…			…

Low- and middle-income countries[a]	Reported number of people receiving antiretroviral therapy, 2006[b]	Month and year of report[c]	Reported number of people receiving antiretroviral therapy, 2007[b]	Month and year of report[c]	Average monthly increase in the number of people receiving antiretroviral therapy in the last year[d]	Estimated number of people receiving antiretroviral therapy, December 2007[b]			Estimated number of people needing antiretroviral therapy based on UNAIDS/WHO methodology, 2007[e]			Estimated antiretroviral therapy coverage December 2007[f]			Estimated number of people needing antiretroviral therapy based on country report, 2007[e]
						Estimate	Low estimate	High estimate	Estimate	Low estimate	High estimate	Estimate	Low estimate	High estimate	
Oman	225	Jan 06	260	Dec 07	3	<500		<500	...			...			...
Pakistan	164	Nov 06	550	Dec 07	32	600	500	600	20 000	13 000	34 000	3%	2%	4%	7 400
Palau	2	Dec 06	3	Dec 07	<1	<100		<100	...			...			3
Panama	2 835	Dec 06	3 994	Dec 07	97	4 000	3 600	4 400	7 200	5 600	9 300	56%	43%	71%	6 500
Papua New Guinea	1 098	Dec 06	2 250	Dec 07	96	2 300	2 100	2 400	5 900	5 000	6 800	38%	33%	45%	6 348
Paraguay	1 018	Sep 06	1 053	Nov 07	3	1 100	1 000	1 200	4 800	2 900	8 800	22%	12%	37%	3 066
Peru	8 424	Dec 06	10 860	Dec 07	203	11 000	9 800	12 000	23 000	17 000	30 000	48%	36%	62%	...
Philippines	170	Dec 06	336	Dec 07	14	<500		<500	1 100	740	1 500	31%	22%	45%	600
Poland	3 072	Dec 06	3 382	Dec 07	26	3 400	3 200	3 600	9 300	5 500	17 000	36%	20%	62%	4 390
Romania	6 790	Dec 06	6 500	Dec 07	- 24	6 500	6 200	6 800	8 900	5 400	10 000	73%	62%	>95%	6 418
Russian Federation	14 681	Dec 06	31 094	Dec 07	1 368	31 000	30 000	33 000	190 000	120 000	300 000	16%	10%	25%	33 365
Rwanda	34 636 [g]	Dec 06	48 569 [g]	Dec 07	1 161	49 000	46 000	51 000	68 000	58 000	78 000	71%	62%	84%	...
Saint Kitts and Nevis	39	Dec 06	...		1	<100		<100	...			...			...
Saint Lucia	50	Dec 06	72	Sep 07	2	<100		<100	...			...			384
Saint Vincent and the Grenadines	74	Sep 06	...		2	<100		<200	...			...			...
Samoa	...		6	Dec 07	<1	<100		<100	...			...			...
Sao Tome and Principe	51	Dec 06	74	Dec 07	2	<100		<100	...			...			300
Senegal	5 500	Dec 06	6 699	Dec 07	100	6 700	6 000	7 400	12 000	9 600	15 000	56%	44%	70%	10 465
Serbia	608	Dec 06	628	May 07	2	600	500	800	3 700	2 100	7 700	17%	8%	30%	...
Seychelles	82	Dec 06	...		1	<100		<200	...			...			...
Sierra Leone	1 416	Dec 06	2 649	Dec 07	103	2 600	2 400	2 900	13 000	9 000	20 000	20%	13%	30%	...
Slovakia	96	Dec 06	98	Jun 07	<1	<100		<200	...			...			...
Solomon Islands	...		3	Dec 07	<1	<100		<100	...			...			...
Somalia	111	Dec 06	211	Dec 07	8	<500		<500	6 300	3 500	11 000	...			...
South Africa	291 754 [g]	Sep 06	428 951 [g,j]	Sep 07	12 266	460 000	398 000	520 000	1 700 000	1 300 000	2 100 000	28%	22%	36%	889 000
Sri Lanka	69	Dec 06	107	Dec 07	3	<200	<100	<200	780	540	1 100	14%	10%	20%	776
Sudan	968	Dec 06	1 198 [k]	Dec 07	19	1 200	1 100	1 300	87 000	58 000	120 000	1%	1%	2%	...
Suriname	460	Dec 06	729	Dec 07	21	700	700	800	1 600	980	2 400	45%	29%	72%	...
Swaziland	17 160	Oct 06	24 535	Dec 07	503	25 000	23 000	26 000	59 000	49 000	68 000	42%	36%	50%	58 249

Syrian Arab Republic	60	Dec 05	75	Dec 07	1	<100		<100	...			…			…
Tajikistan	37	Dec 06	86	Dec 07	4	<100		<100	1 300	750	2 400	6%	4%	11%	79
Thailand	105 620 [g]	Sep 06	143 539 [g]	Sep 07	3 145	153 000	135 000	171 000	250 000	190 000	320 000	61%	47%	81%	252 387
The former Yugoslav Republic of Macedonia	11	Dec 06	15	Dec 07	<1	<100		<100	...			…			…
Timor-Leste	…		0	Dec 07	0	0			...			…			…
Togo	6 993	Dec 06	7 980	Dec 07	82	8 000	7 600	8 400	41 000	33 000	52 000	19%	15%	24%	26 232
Tonga	…		…		…	…			...			…			…
Tunisia	298	Dec 06	…		*0*	<500		<500	1 000	760	1 500	29%	20%	39%	…
Turkey	685	Dec 06	…		*17*	900	700	1 100	...			…			…
Turkmenistan	0	Dec 06	…		*0*	0			...			…			…
Tuvalu	…		1	Dec 07	<1	<100		<100	...			…			1
Uganda	89 193	Sep 06	111 232	Sep 07	1 372	115 000	110 000	121 000	350 000	290 000	430 000	33%	27%	40%	312 000
Ukraine	4 777	Dec 06	7 657	Dec 07	240	7 700	7 300	8 000	91 000	69 000	120 000	8%	7%	11%	21 770
United Republic of Tanzania	60 342	Dec 06	135 696	Dec 07	6 280	136 000	129 000	142 000	440 000	360 000	530 000	31%	26%	38%	1 867 918
Uruguay	1 495	Sep 06	1 776	Dec 07	23	1 800	1 600	2 000	3 100	1 700	7 800	56%	23%	>95%	1 970
Uzbekistan	259	Dec 06	…		*5*	<500		<500	1 400	630	3 500	24%	9%	51%	…
Vanuatu	2	Oct 06	2	Dec 07	0	<100		<100	...			…			…
Venezuela (Bolivarian Republic of)	15 417	Dec 05	…		…	…	12 000	19 000	35 000	21 000	89 000	…[l]			…
Viet Nam	8 310	Dec 06	14 969	Sep 07	795	17 000	16 000	18 000	67 000	41 000	110 000	26%	17%	42%	49 960
Yemen	0	Sep 06	107	Dec 07	9	<200		<200	...			…			…
Zambia	82 030 [g]	Dec 06	151 199 [g]	Dec 07	5 764	151 000	143 000	159 000	330 000	270 000	380 000	46%	40%	56%	370 000
Zimbabwe	66 920 [g]	Dec 06	97 692 [g]	Dec 07	2 564	98 000	93 000	103 000	570 000	440 000	690 000	17%	14%	22%	260 000

High-income countries	Reported number of people receiving antiretroviral therapy, 2006[b]	Month and year of report[c]	Reported number of people receiving antiretroviral therapy, 2007[b]	Month and year of report[c]
Andorra	24	Dec 06	…	
Antigua and Barbuda	114	Sep 06	148	Sep 07
Australia	…		…	
Austria	2 101	Dec 05	…	
Bahamas	1 252	Dec 06	1 244	Sep 07
Bahrain	…		…	
Barbados	623	Dec 06	660	Jun 07
Belgium	6 450	Apr 06	…	
Brunei Darussalam	…		…	
Canada	21 000	Sep 06	…	
Cyprus	…		151	Dec 07
Czech Republic	570	Dec 06	570	Jun 07
Denmark	2 800	Dec 06	…	
Estonia	495	Dec 06	772	Dec 07
Finland	450	Aug 06	…	
France	52 600	<05	…	
Germany	27 000	Dec 06	…	
Greece	…		3 500	Dec 07
Iceland	100	<05	…	
Ireland	1 600	Dec 05	…	
Israel	2 431	Dec 06	…	
Italy	81 600	<05	…	
Japan	48	Dec 06	…	
Kuwait	…		…	
Luxembourg	312	Dec 06	…	
Malta	…		65	Jun 07
Monaco	45	Dec 05	…	
Netherlands	…		7 919	Apr 07
New Zealand	…		…	
Norway	900	Dec 05	…	
Portugal	18 679	Dec 05	…	
Qatar	…		…	
Republic of Korea	…		…	
San Marino	…		…	
Saudi Arabia	…		…	
Singapore	…		…	
Slovenia	147	Dec 06	157	Jul 07
Spain	77 500	Dec 06	…	
Sweden	2 800	Dec 06	…	
Switzerland	…		…	
Trinidad and Tobago	2 133	Dec 06	2 592	Dec 07
United Arab Emirates	…		…	
United Kingdom	36 000	Jun 06	…	
United States of America	268 000	<05	…	

... Data not available or not applicable.
a See country classification by income, level of the epidemic and geographical, UNAIDS, UNICEF and WHO regions.
b An increasing number of countries report the number of children younger than 15 years of age receiving antiretroviral therapy, and this table includes them. Annex 2 provides antiretroviral therapy data by age and sex.
c '<05' indicates that data exist but no update has been received since December 2004. These data should be interpreted cautiously, as they may reflect the situation in early 2004 or even 2003.
d The monthly increase in the number of people receiving antiretroviral therapy during, in most cases, the last six months of 2007, is calculated using two data points in 2007 with the longest period between them and applying a linear projection for each month up to December 2007. For countries with data available for both December 2006 and 2007, the monthly growth is calculated by dividing the growth in one year by 12. Except for Botswana and Zimbabwe, the calculated monthly growth rate only applies to the growth in the public sector. For countries that have not reported treatment data in 2007, the monthly growth is shown in italics.
e The needs estimates are based on the methods described in the explanatory notes to Annex 2.
f The coverage estimates are based on the estimated unrounded numbers of people receiving antiretroviral therapy and the estimated unrounded need for antiretroviral therapy (based on UNAIDS/WHO methodology). The ranges in coverage estimates are based on plausibility bounds in the denominator: that is, low and high estimates of need. No coverage has been calculated where the estimated need is less than 500.
g Private-sector data are included in the reported total.

Private-sector data included in the number of people receiving antiretroviral therapy		
Country	2006	2007
Angola	300	300
Botswana	8 500	9 514
China[1]	500	500
Colombia	1 000	…
India	35 000	35 000
Kenya	5 000	5 000
Malawi	2 624	3 937
Nigeria	5 000	30 000
Rwanda	500	500
South Africa	110 000	100 000
Thailand	10 000	10 000
Zambia	2 000	2 000
Zimbabwe	6 000	10 000

[1] World Bank project

h By December 2007, the government reported that 118 052 people were receiving antiretroviral therapy through the public sector at 137 sites. Nongovernmental organizations and intersectoral health centres treated about 5000 people at 10 sites. A further estimated 35 000 people were treated in the unorganized private sector. Overall, an estimated 158 000 [138 000–178 000] people were receiving antiretroviral therapy by the end of 2007, including people enrolled through private facilities.
i Estimates of the number of people needing antiretroviral therapy are currently being reviewed and will be adjusted, as appropriate, based on ongoing data collection and analysis.
j Includes a private-sector estimate of 100 000. The Department of Health reported a cumulative number of 371 731 for the public sector in September 2007. WHO/UNAIDS adjusted the public sector number for attrition.
k Two separate reports were received from Sudan: northern Sudan, 895; southern Sudan, 303.
l No coverage has been calculated as no data have been reported since December 2005.

Annex 2. Reported numbers of people receiving antiretroviral therapy in low- and middle-income countries by sex and by age, 2006-2007

Low- and middle-income countries[a]	Reported number of all males and females receiving antiretroviral therapy					Reported number of adults and children receiving antiretroviral therapy[b]				
	Month and year of report	Males	% of total	Females	% of total	Month and year of report[c]	Children (<15 years)	% of total	Adults (15+ years)	% of total
Afghanistan	Dec 07	0		0		Dec 07	0		0	
Albania		…		…		Dec 07	12	16%	62	84%
Algeria		…		…		Oct 07	45	5%	884	95%
Angola		…		…		Dec 07	363	3%	10 877	97%
Argentina	Dec 07	22 557	59%	15 685	41%	Dec 07	3 654	10%	34 588	90%
Armenia	Dec 07	52	67%	26	33%	Dec 07	4	5%	74	95%
Azerbaijan		…		…		Dec 07	0	0%	81	100%
Bangladesh		…		…			…		…	
Belarus	Dec 07	655	74%	229	26%	Dec 07	69	8%	815	92%
Belize	Dec 07	263	47%	295	53%	Dec 07	65	12%	493	88%
Benin		…		…		Dec 07	542	6%	9 223	94%
Bhutan	Dec 07	10	56%	8	44%	Dec 07	0	0%	18	100%
Bolivia	Dec 07	345	70%	151	30%	Dec 07	22	4%	474	96%
Bosnia and Herzegovina	Dec 07	22	73%	8	27%	Dec 07	1	3%	29	97%
Botswana	Dec 07	32 623	39%	50 795	61%	Dec 07	9 496	11%	73 922	89%
Brazil	Dec 07	109 057	60%	71 943	40%	Dec 07	6 815	4%	174 185	96%
Bulgaria	Dec 07	150	68%	71	32%	Dec 07	3	1%	218	99%
Burkina Faso	Sep 07	5 084	32%	10 804	68%	Sep 07	629	4%	15 259	96%
Burundi	Dec 07	3 486	32%	7 408	68%	Dec 07	1 198	11%	9 696	89%
Cambodia	Dec 07	13 118	49%	13 546	51%	Dec 07	2 541	10%	24 123	90%
Cameroon	Dec 07	16 036	35%	29 781	65%	Dec 07	1 694	4%	44 123	96%
Cape Verde	Dec 07	125	43%	166	57%	Dec 07	23	8%	268	92%
Central African Republic	Sep 07	3 215	40%	4 822	60%	Sep 07 [c]	380	6%	5 876	94%
Chad	Dec 07	2 738	37%	4 662	63%	Dec 07	148	2%	7 252	98%
Chile	Dec 07	8 495	83%	1 728	17%		…		…	
China	Dec 07 [d]	19 245	56%	15 148	44%	Dec 07	766	2%	33 846	98%
Colombia		…		…			…		…	
Comoros	Dec 07	4	57%	3	43%	Dec 07	1	14%	6	86%
Congo	Dec 07	1 886	40%	2 830	60%	Dec 07	462	10%	4 254	90%
Cook Islands		…		…			…		…	
Costa Rica		…		…			…		…	
Côte d'Ivoire	Sep 07 [c]	12 349	35%	22 525	65%	Sep 07 [c]	1 785	5%	33 089	95%
Croatia	Dec 06 [e]	232	80%	59	20%	Dec 06 [e]	5	2%	286	98%
Cuba		…		…		Dec 07	17	1%	3 089	99%
Democratic People's Republic of Korea		…		…			…		…	
Democratic Republic of the Congo	Dec 06	8 397	48%	9 164	52%	Dec 06	527	3%	17 034	97%
Djibouti	Dec 07	343	49%	362	51%	Dec 07	25	4%	680	96%
Dominica	Dec 07 [c]	9	24%	28	76%	Dec 07	2	5%	37	95%
Dominican Republic	Dec 07 [c]	3 661	49%	3 803	51%	Dec 07	589	7%	7 610	93%
Ecuador		…		…		Dec 07	252	8%	2 962	92%
Egypt		…		…			…		…	
El Salvador	Dec 07 [c]	2 136	48%	2 315	52%	Dec 07 [c]	693	16%	3 758	84%
Equatorial Guinea		…		…			…		…	
Eritrea		…		…		Dec 07	65	5%	1 236	95%
Ethiopia	Dec 07	40 138	44%	50 074	56%	Dec 07	4 534	5%	85 678	95%
Fiji		…		…		Dec 07	1	4%	27	96%
Gabon	Dec 07	2 886	45%	3 487	55%	Dec 07	73	1%	6 300	99%
Gambia		…		…			…		…	
Georgia	Nov 07	239	72%	95	28%	Nov 07	15	4%	319	96%
Ghana		…		…		Dec 07	576	4%	12 781	96%
Grenada	Dec 07 [c]	24	53%	21	47%	Dec 07	2	4%	45	96%

Low- and middle-income countries[a]	Reported number of all males and females receiving antiretroviral therapy					Reported number of adults and children receiving antiretroviral therapy[b]				
	Month and year of report	Males	% of total	Females	% of total	Month and year of report[c]	Children (<15 years)	% of total	Adults (15+ years)	% of total
Guatemala		…		…		Dec 07	597	8%	7 215	92%
Guinea	Sep 07	2 296	44%	2 932	56%	Sep 07	307	6%	4 921	94%
Guinea-Bissau	Dec 07	321	36%	569	64%	Dec 07	41	5%	849	95%
Guyana	Dec 07	894	45%	1 071	55%	Dec 07	162	8%	1 803	92%
Haiti	Dec 07	6 240	43%	8 274	57%	Sep 06 [e]	439	5%	7 597	95%
Honduras		…		…		Dec 07	751	13%	4 829	87%
Hungary	Dec 07	381	84%	71	16%	Dec 07	7	2%	445	98%
India	Dec 07 [f]	73 061	64%	40 888	36%	Dec 07	8 887	7%	114 133	93%
Indonesia		…		…			…		…	
Iran (Islamic Republic of)	Aug 07	697	84%	132	16%	Aug 07	21	3%	808	97%
Iraq	Dec 07	0		0		Dec 07	0		0	
Jamaica		…		…		Sep 06 [e]	223	10%	2 122	90%
Jordan	Dec 07	42	79%	11	21%	Dec 07	4	8%	49	92%
Kazakhstan	Dec 07	283	64%	159	36%	Dec 07	71	16%	371	84%
Kenya	Dec 07	60 200	35%	111 800	65%	Dec 07	15 090	9%	156 910	91%
Kiribati		…		…			…		…	
Kyrgyzstan	Dec 07	67	77%	20	23%	Dec 07	26	30%	61	70%
Lao People's Democratic Republic	Dec 07	427	61%	273	39%	Dec 07	36	5%	664	95%
Latvia	Dec 06 [e]	181	60%	120	40%	Dec 06 [e]	14	5%	287	95%
Lebanon	Dec 07	192	78%	54	22%	Dec 07	9	4%	237	96%
Lesotho	Dec 07	7 582	35%	14 128	65%	Dec 07	1 553	7%	20 157	93%
Liberia		…		…			…		…	
Libyan Arab Jamahiriya		…		…			…		…	
Lithuania	Dec 07	81	83%	17	17%	Dec 07	1	1%	97	99%
Madagascar		…	…	…			…		…	
Malawi	Sep 07 [c]	51 204	39%	79 284	61%	Sep 07 [c]	10 238	8%	120 250	92%
Malaysia		…		…			…		…	
Maldives		…		…		Dec 06	0	0%	1	100%
Mali	Nov 07	4 369	36%	7 803	64%	Nov 07	579	5%	11 593	95%
Marshall Islands		…	…	…			…		…	
Mauritania	Dec 07	469	56%	370	44%	Dec 07	23	3%	816	97%
Mauritius		…		…			…		…	
Mexico		…		…			…		…	
Micronesia (Federated States of)		…		…			…		…	
Moldova	Dec 07	261	56%	203	44%	Dec 07	19	4%	445	96%
Mongolia	Dec 07	3	100%	0	0%	Dec 07	0	0%	3	100%
Montenegro	Dec 06 [c]	17	81%	4	19%	Dec 06	2	8%	24	92%
Morocco	Dec 07	867	53%	781	47%	Dec 07	58	4%	1 590	96%
Mozambique	Nov 07	32 990	38%	52 832	62%	Nov 07	6 320	7%	79 502	93%
Myanmar	Dec 07	6 634	60%	4 466	40%		…		…	
Namibia	Sep 07 [c,e]	13 783	35%	25 939	65%	Sep 07 [c,e]	5 283	13%	34 439	87%
Nauru		…		…			…		…	
Nepal	Sep 07	762	61%	478	39%	Sep 07	51	4%	1 189	96%
Nicaragua	Dec 07	336	64%	186	36%	Dec 07	45	9%	477	91%
Niger	Oct 07	723	49%	751	51%	Oct 07	62	4%	1 412	96%
Nigeria	Sep 07 [c]	40 643	38%	65 429	62%	Dec 07 [c]	15 345	20%	61 381	80%
Niue		…		…			…		…	
Oman	Dec 07	200	77%	60	23%	Jan 06 [e]	25	11%	200	89%
Pakistan	Dec 07	415	75%	135	25%	Dec 07	21	4%	529	96%
Palau	Dec 07	1	33%	2	67%	Dec 07	0	0%	3	100%
Panama		…		…		Sep 06 [e]	167	6%	2 726	94%

Low- and middle-income countries[a]	Reported number of all males and females receiving antiretroviral therapy					Reported number of adults and children receiving antiretroviral therapy[b]				
	Month and year of report	Males	% of total	Females	% of total	Month and year of report[c]	Children (<15 years)	% of total	Adults (15+ years)	% of total
Papua New Guinea	Dec 07	1 037	46%	1 213	54%	Dec 07	185	8%	2 065	92%
Paraguay	Nov 07 [c]	678	71%	271	29%	Nov 07	104	10%	949	90%
Peru		…		…		Dec 07 [c]	322	4%	7 721	96%
Philippines	Dec 07	134	40%	202	60%	Dec 07	4	1%	332	99%
Poland	Dec 07	2 392	71%	990	29%	Dec 07	118	3%	3 264	97%
Romania	Dec 07 [c]	3 231	50%	3 187	50%	Dec 07	196	3%	6 304	97%
Russian Federation		…		…		Jan 06 [e]	330	7%	4 520	93%
Rwanda	Dec 07	17 980	37%	30 089	63%	Dec 07	4 350	9%	43 719	91%
Saint Kitts and Nevis		…		…			…		…	
Saint Lucia	Sep 07	40	56%	32	44%	Sep 07	2	3%	70	97%
Saint Vincent and the Grenadines		…		…			…		…	
Samoa		…		…			…		…	
Sao Tome and Principe	Dec 07	27	36%	47	64%	Dec 07	2	3%	72	97%
Senegal	Dec 07	2 220	33%	4 479	67%	Dec 07	384	6%	6 315	94%
Serbia	Dec 06 [e]	360	60%	240	40%	Dec 06 [e]	14	2%	586	98%
Seychelles		…		…			…		…	
Sierra Leone		…		…			…		…	
Slovakia	Jun 07 [c]	79	82%	17	18%	Jun 07	0	0%	98	100%
Solomon Islands		…		…			…		…	
Somalia	Dec 07	86	41%	125	59%	Dec 07	5	2%	206	98%
South Africa	Sep 07 [c]	73 882	36%	130 401	64%	Sep 07 [c]	32 060	9%	339 671	91%
Sri Lanka		…		…			…		…	
Sudan		…		…			…		…	
Suriname		…		…		Dec 07	58	8%	650	92%
Swaziland	Jun 07 [e]	7 702	37%	12 908	63%	Dec 07	2 123	9%	22 412	91%
Syrian Arab Republic	Dec 07	57	76%	18	24%	Dec 07	4	5%	71	95%
Tajikistan	Dec 07	57	66%	29	34%	Dec 07	4	5%	82	95%
Thailand		…		…		Sep 07	6 687	5%	126 852	95%
The former Yugoslav Republic of Macedonia	Dec 07	4	27%	11	73%	Dec 07	1	7%	14	93%
Timor-Leste		…		…			…		…	
Togo	Dec 07	2 793	35%	5 187	65%	Dec 07	559	7%	7 421	93%
Tonga		…		…			…		…	
Tunisia	Dec 06	204	68%	94	32%	Dec 06	3	1%	295	99%
Turkey	Dec 06	519	76%	166	24%	Dec 06	5	1%	680	99%
Turkmenistan	Dec 06	0		0		Dec 06	0		0	
Tuvalu		…		…			…		…	
Uganda	Sep 07 [c]	30 943	37%	52 606	63%	Sep 07	8 532	8%	102 700	92%
Ukraine	Dec 07	4 111	54%	3 546	46%	Dec 07	908	12%	6 749	88%
United Republic of Tanzania	Sep 07 [c]	30 100	36%	53 346	64%	Dec 07 [e]	11 176	8%	124 520	92%
Uruguay		…		…		Sep 06	70	5%	1 355	95%
Uzbekistan		…		…			…		…	
Vanuatu		…		…			…		…	
Venezuela (Bolivarian Republic of)		…		…			…		…	
Viet Nam	Sep 07 [c]	6 872	76%	2 118	24%	Sep 07	789	5%	14 180	95%
Yemen	Dec 07	69	64%	38	36%	Dec 07	1	1%	106	99%
Zambia	Dec 07	65 648	44%	83 551	56%	Dec 07	11 602	8%	137 597	92%
Zimbabwe	Dec 07 [c]	32 377	38%	52 837	62%	Dec 07 [c]	8 237	10%	77 479	90%

... Data not available or not applicable.
a See country classification by income, level of the epidemic and geographical, UNAIDS, UNICEF and WHO regions.
b More recent data on children receiving antiretroviral therapy, which were not reported as part of the breakdown by age group, are listed below:

Country	Month and year of report	Children (<15 years)
Bangladesh	Dec 06	1
Burkina Faso	Dec 07	658
Central African Republic	Dec 07	417
Colombia	Dec 07	3
Costa Rica	Dec 06	52
Democratic Republic of the Congo	Dec 07	1 632
Egypt	Dec 07	18
Gambia	Dec 06	83
Haiti	Dec 06	867
Indonesia	Dec 07	19
Jamaica	Sep 07	336
Liberia	Sep 07	92
Madagascar	Dec 06	0
Malawi	Dec 07	10 439
Malaysia	Dec 07	500
Mexico	Dec 06	176
Montenegro	Dec 07	1
Myanmar	Dec 06	287
Niger	Dec 07	104
Panama	Dec 06	214
Saint Lucia	Dec 07	2
Sierra Leone	Dec 06	12
Sri Lanka	Dec 06	0
Turkey	Dec 07	9
Uruguay	Dec 06	160
Uzbekistan	Dec 07	225
Venezuela (Bolivarian Republic of)	Dec 06	611

c The latest available breakdowns refer to partial or cumulative data sets and do not reflect national-level data. See Annex 1 for national-level data.
d This breakdown excludes 219 people whose sex is not recorded. See Annex 1 for national-level data.
e The latest available breakdowns are not as recent as the latest reported national-level data. See Annex 1 for the latest reported national-level data.
f This breakdown excludes 184 transgender adults and 8887 children (younger than 15 years).

Annex 3. Preventing mother-to-child transmission of HIV in low- and middle-income countries, 2007

Low- and middle-income countries[a]	Number of pregnant women living with HIV who received antiretrovirals for preventing mother-to-child transmission[b]	Period	Estimated number of pregnant women living with HIV needing antiretrovirals for preventing mother-to-child transmission based on UNAIDS/WHO methods			Estimated percentage of pregnant women living with HIV who received antiretrovirals for preventing mother-to-child transmission[c]			Estimated number of pregnant women living with HIV needing antiretrovirals for preventing mother-to-child transmission based on country report	Pregnant women tested for HIV		Infants born to women living with HIV receiving antiretrovirals for preventing mother-to-child transmission		Infants born to women living with HIV receiving co-trimoxazole prophylaxis within two months of birth		Infants born to women living with HIV receiving a virological test by two months of age	
			Estimate	Low estimate	High estimate	Estimate	Low estimate	High estimate		Reported number	Estimated coverage	Reported number	Estimated coverage	Reported number	Estimated coverage	Reported number	Estimated coverage
Afghanistan	0	Jan 07–Dec 07	...			...			...	0 [d]	0%	0 [d]		0 [d]		0 [d]	
Albania	...		...			...			...	...		...		...		...	
Algeria	19	Jan 07–Dec 07	<500	<200	660	...	3%	12%	0	...		...		...		...	
Angola	1 645	Jan 07–Dec 07	18 000	13 000	22 000	9%	7%	13%	22 332	57 605 [d]	7%	899 [d]	5%	...		...	
Argentina	2 193	Jan 07–Dec 07	1 700	1 200	2 400	...	93%	>95%	2 530	584 000 [d]	85%	50 [d]	3%	...		2 148 [d]	>95%
Armenia	6	Jan 07–Dec 07	<100	<100	<100	...	19%	45%	6	34 364	>95%	7	35%	0	0%	0	0%
Azerbaijan	6	Jan 07–Dec 07	<100	<100	<200	...	4%	17%	...	162 565	>95%	1	1%	2	3%	4	6%
Bangladesh	5	Jan 06–Dec 06	<500	<200	<500	...	1%	4%	...	0 [d]	0%	5 [d]	2%	5 [d]	2%	0 [d]	0%
Belarus	127	Jan 07–Dec 07	<100	<100	<200	...	90%	>95%	144	122 614	>95%	136	>95%	136	>95%	114 [d]	>95%
Belize	55	Jan 07–Dec 07	<200	<100	<500	...	24%	64%	57	6 345	91%	57	39%	9	6%	51	35%
Benin	1 830	Jan 07–Dec 07	4 500	3 900	5 300	40%	35%	47%	1 158	83 776	23%	984	22%	984	22%	...	
Bhutan	...		...			...			...	2 244 [d]	19%	0 [d]		0 [d]		0 [d]	
Bolivia	34	Jan 07–Dec 07	<200	<200	<500	...	13%	24%	763	7 933 [e]	3%	28	15%	...		...	
Bosnia and Herzegovina	0	Jan 07–Dec 07	...			...			1	1 198	3%	0		0		0	
Botswana	12 419	Jan 07–Dec 07	11 000	10 000	12 000	>95%	>95%	>95%	...	35 970	77%	6 632	58%	9 489	83%	...	
Brazil	6 188	Jan 07–Dec 07	8 600	5 600	13 000	...	49%	>95%	12 535	2 473 604	66%	4 386	79%	...		2 626	47%
Bulgaria	1	Jan 07–Dec 07	...			...			...	...		...		...		...	
Burkina Faso	1 480	Jan 07–Dec 07	8 300	6 800	10 000	18%	15%	22%	18 495	61 628	10%	1 366	16%	...		68	1%
Burundi	1 102	Jan 07–Dec 07	7 800	5 100	10 000	14%	11%	22%	18 010	17 422 [d]	5%	814 [d]	10%	814 [d]	10%	0 [d]	0%
Cambodia	505	Jan 07–Dec 07	1 600	1 200	2 000	...	25%	41%	4 509	72 450	19%	517	33%	203	13%	43	3%
Cameroon	7 516 [f]	Jan 07–Dec 07	34 000	22 000	42 000	22%	18%	34%	67 875	200 000 [e]	31%	4 948	14%	1 030	3%	... [k]	
Cape Verde	51	Jan 07–Dec 07	...			...			99	6 097 [d]	41%	31 [d]		31 [d]		0 [d]	
Central African Republic	3 714 [f]	Jan 07–Dec 07	11 000	9 800	12 000	34%	30%	38%	36 093	25 517	16%	749	7%	443 [d]	4%	117	1%
Chad	254	Jan 06–Dec 06	18 000	10 000	22 000	1%	1%	2%	...	...		128 [d]	1%	63 [d]	0%	0 [d]	0%
Chile	117	Jan 07–Dec 07	<500	<500	500	...	23%	45%	117	...		...		...		...	
China	593 [g]	Jan 07–Dec 07	6 800	4 300	11 000	...	6%	14%	787	1 309 625 [g]	8%	683 [g]	10%	650 [d]	10%	...	

Colombia	144	Jan 07–Dec 07	2 500	1 600	3 700	...	4%	9%	184	145 404	16%	131	5%	...		65	3%
Comoros	0	Jan 07–Dec 07	<100	<100	<100	...	0%	0%	4	181 [d]	1%	0 [d]	0%	0 [d]	0%	0 [d]	0%
Congo	240	Jan 07–Dec 07	4 400	3 400	5 400	5%	4%	7%	1 617	5 549	4%	462	10%	462	10%	462	10%
Cook Islands	...		...			...			...	...		...		...		...	
Costa Rica	21	Jan 06–Dec 06	<200	<100	<500	...	9%	25%	37	61 000 [d]	76%	40 [d]	28%	40 [d]	28%	40 [d]	28%
Côte d'Ivoire	3 240 [f]	Jan 07–Dec 07	28 000	21 000	34 000	12%	9%	16%	21 977	48 574	7%	1 672	6%	...		...	
Croatia	2	Jan 07–Dec 07	...			...			3	...		...		...		...	
Cuba	41	Jan 07–Dec 07	<100	<100	<200	...	37%	>95%	35	112 434	93%	41	75%	1	2%	41	75%
Democratic People's Republic of Korea	...		...			...			...	...		...		...		...	
Democratic Republic of the Congo	3 435	Jan 07–Dec 07	38 000	33 000	46 000	9%	8%	10%	68 865	130 009	4%	1 930	5%	170 [d]	0%	...	
Djibouti	52	Jan 06–Dec 06	820	610	1 000	6%	5%	9%	...	6 992 [d]	29%	52 [d]	6%	52 [d]	6%	...	
Dominica	1	Jan 07–Dec 07	...			...			1	1 224 [d]		2 [d]		2 [d]		0 [d]	
Dominican Republic	795	Jan 07–Dec 07	1 600	1 200	2 200	...	36%	65%	1 649	97 350	42%	872	53%	...		43	3%
Ecuador	268	Jan 07–Dec 07	<500	<500	800	...	34%	>95%	347	114 000 [d]	40%	251 [d]	54%	...		...	
Egypt	5	Jan 07–Dec 07	<200	<200	<500	...	2%	4%	...	1 750	0%	2	1%	2	1%	5	3%
El Salvador	130	Jan 07–Dec 07	650	<500	1 100	...	12%	32%	130	103 498	65%	5	1%	111	17%	116	18%
Equatorial Guinea	103	Jan 06–Dec 06	710	530	950	14%	11%	20%	...	6 300 [d]	33%	...		...		...	
Eritrea	168 [f]	Jan 07–Dec 07	2 500	1 600	4 000	7%	4%	11%	3 578	34 884 [e]	19%	133	5%	150 [e]	6%	0	0%
Ethiopia	4 888	Jan 07–Dec 07	66 000	58 000	74 000	7%	6%	8%	75 420	157 919	5%	3 031	5%	388 [d]	1%	94 [d]	0%
Fiji	7	Jan 07–Dec 07	<100	<100	<100	...	82%	>95%	7	5 [d]	0%	...		2 [d]	25%	...	
Gabon	494	Jan 07–Dec 07	2 300	1 600	3 500	21%	14%	32%	2 570	10 918	32%	248	11%	58 [h]	2%	... [h]	
Gambia	133 [f]	Jan 07–Dec 07	510	<500	800	...	17%	58%	709	15 686 [i]	26%	116 [i]	23%	...		0 [d]	0%
Georgia	22	Jan 07–Dec 07	<100	<100	<100	...	41%	>95%	25	49 805 [j]	>95%	23	>95%	21	91%	23	>95%
Ghana	2 896	Jan 07–Dec 07	14 000	12 000	16 000	21%	18%	24%	19 918	109 334 [i]	16%	263 [d]	2%	...		...	
Grenada	7	Jan 07–Dec 07	...			...			10	...		...		...		...	
Guatemala	373	Jan 07–Dec 07	5 300	3 200	8 100	...	5%	12%	2 270	45 549	10%	184 [k]	3%	171 [k]	3%	... [k]	
Guinea	679 [f]	Jan 07–Dec 07	6 200	5 000	8 600	11%	8%	14%	1 722	29 919	8%	364 [k]	6%	334 [k]	5%	4 [k]	0%
Guinea-Bissau	349	Jan 07–Dec 07	1 500	1 000	2 100	24%	17%	34%	3 716	6 886	8%	217 [d]	15%	0	0%	0 [d]	0%
Guyana	144	Jan 06–Dec 06	<500	<200	<500	...	29%	>95%	...	13 041 [d]	>95%	174 [d]	52%	90 [d]	27%	0 [d]	0%
Haiti	1 107	Jan 07–Dec 07	5 100	4 200	6 100	22%	18%	26%	5 224	110 114	41%	1 752	35%	...		...	
Honduras	220	Jan 07–Dec 07	650	<500	1 200	...	19%	79%	...	79 507	40%	6	1%	...		196	30%
Hungary	1	Jan 07–Dec 07	<100	<100	<100	...	2%	8%	1	...		...		...		...	
India	8 816	Jan 07–Dec 07	64 000	37 000	92 000	...	10%	24%	86 121	2 771 665 [i]	10%	5 043	8%	1 200 [d]	2%	...	
Indonesia	89	Jan 07–Dec 07	3 300	2 100	5 300	...	2%	4%	...	4 830	0%	25	1%	25	1%	18 [d]	1%
Iran (Islamic Republic of)	22	Sep 06–Sep 07	1 300	940	1 800	...	1%	2%	220	158	0%	22 [m]	2%	13 [m]	1%	19 [m]	1%
Iraq	...		...			...			...	...		...		...		...	

Low- and middle-income countries[a]	Number of pregnant women living with HIV who received antiretrovirals for preventing mother-to-child transmission[b]	Period	Estimated number of pregnant women living with HIV needing antiretrovirals for preventing mother-to-child transmission based on UNAIDS/WHO methods			Estimated percentage of pregnant women living with HIV who received antiretrovirals for preventing mother-to-child transmission[c]			Estimated number of pregnant women living with HIV needing antiretrovirals for preventing mother-to-child transmission based on country report	Pregnant women tested for HIV		Infants born to women living with HIV receiving antiretrovirals for preventing mother-to-child transmission		Infants born to women living with HIV receiving co-trimoxazole prophylaxis within two months of birth		Infants born to women living with HIV receiving a virological test by two months of age	
			Estimate	Low estimate	High estimate	Estimate	Low estimate	High estimate		Reported number	Estimated coverage	Reported number	Estimated coverage	Reported number	Estimated coverage	Reported number	Estimated coverage
Jamaica	292 [f]	Jan 07–Dec 07	<500	<500	640	...	45%	>95%	171	12 080 [n]	22%	162 [n]	37%	...		...	
Jordan	2	Jan 07–Dec 07	...			...			0	6	0%	1		0 [d]		4	
Kazakhstan	126	Jan 07–Dec 07	<200	<100	<500	...	30%	>95%	210	406 129	>95%	153	87%	130	74%	150	85%
Kenya	52 858 [f]	Jan 07–Dec 07	76 000	66 000	86 000	69%	61%	80%	105 000	428 624	30%	18 874	25%	4 534 [o]	6%	17 000	22%
Kiribati	...		...			...			...	...		...		...		...	
Kyrgyzstan	3	Jan 07–Dec 07	<100	<100	<200	...	2%	8%	197	59 794	53%	1	1%	...		...	
Lao People's Democratic Republic	24	Jan 07–Dec 07	<200	<100	<500	...	9%	36%	235	1 860	1%	17	14%	16	14%	0	0%
Latvia	37	Jan 07–Dec 07	<100	<100	<200	...	33%	75%	38	...		...		...		...	
Lebanon	...		<100	<100	<100	...			...	...		...		...		...	
Lesotho	3 966	Jan 07–Dec 07	12 000	11 000	14 000	32%	29%	36%	12 750	23 965	41%	2 767	22%	...		3 437	28%
Liberia	224	Jan 07–Dec 07	3 100	2 400	3 900	7%	6%	9%	...	9 318	5%	197	6%	112	4%	4	0%
Libyan Arab Jamahiriya	...		...			...			...	...		...		...		...	
Lithuania	9	Jan 07–Dec 07	<100	<100	<100	...	27%	>95%	10	...		...		...		...	
Madagascar	25	Jan 07–Dec 07	<500	<500	760	...	3%	9%	1 521	66 983 [d]	9%	4 [d]	1%	2 [d]	0%	2 [d]	0%
Malawi	23 158	Jan 07–Dec 07	73 000	64 000	82 000	32%	28%	36%	71 847	280 446	50%	12 039	17%	8 803	12%	2 435	3%
Malaysia	183	Jan 07–Dec 07	1 300	770	2 000	...	9%	24%	158	380 346	68%	177	14%	...		177	14%
Maldives	...		<100	<100	<100	...			...	4 438	63%	...		...		...	
Mali	1 018	Jan 07–Dec 07	8 600	6 800	11 000	...	10%	15%	8 570	48 019 [k]	8%	602 [i]	7%	195 [p]	2%	63 [i]	1%
Marshall Islands	...		...			...			...	...		...		...		...	
Mauritania	45	Jan 07–Dec 07	<500	<500	770	...	6%	20%	800	6 840 [k]	7%	21	5%	18	4%	0	0%
Mauritius	19	Jan 07–Dec 07	<200	<100	<500	...	6%	23%	60	...		...		...		...	
Mexico	146	Jan 06–Dec 06	3 100	2 000	4 900	...	3%	7%	...	...		146 [d]	5%	...		176 [d]	6%
Micronesia (Federated States of)	...		...			...			...	...		...		...		...	
Moldova	73	Jan 07–Dec 07	<100	<100	<200	...	51%	>95%	86	36 879	84%	77	93%	0	0%	65	78%
Mongolia	0	Jan 07–Dec 07	<100	<100	<100	...	0%	0%	13	...		0	0%	0	0%	0	0%
Montenegro	1	Jan 07–Dec 07	...			...			...	...		1		...		...	
Morocco	42	Jan 07–Dec 07	<500	<500	550	...	8%	18%	544	...		...		...		...	
Mozambique	44 975	Jan 07–Dec 07	97 000	81 000	120 000	46%	39%	56%	150 995	366 281	43%	26 708	27%	...		585	1%

Myanmar	1 280 [f]	Jan 07–Dec 07	4 500	2 900	7 100	...	18%	43%	...	99 789 [d]	11%	1 008 [d]	22%	...		...	
Namibia	6 022	Jan 06–Dec 06	9 400	7 600	11 000	64%	53%	80%	...	42 322 [d]	80%	6 400 [d]	68%	...		...	
Nauru	...		...			...			...	...		...		...		...	
Nepal	36	Oct 06–Sep 07	1 500	990	2 300	...	2%	4%	1 800	32 553	4%	34	2%	31	2%	0	0%
Nicaragua	43	Jan 07–Dec 07	<200	<100	<500	...	15%	44%	174	27 741 [k]	20%	43 [k]	26%	43 [k]	26%	43 [k]	26%
Niger	1 006 [f]	Jan 07–Dec 07	3 300	2 100	5 000	...	20%	47%	6 710	66 775	10%	278	9%	...		...	
Nigeria	12 278	Jan 07–Dec 07	190 000	130 000	240 000	7%	5%	10%	...	207 107	4%	4 259	2%	...		...	
Niue	...		...			...			...	...		...		...		...	
Oman	...		...			...			...	...		...		...		...	
Pakistan	5	Jan 07–Dec 07	2 300	1 500	3 700	...	<1%	<1%	...	3 249	0%	3	0%	0	0%	4	0%
Palau	...		...			...			...	...		...		...		...	
Panama	71 [f]	Jan 07–Dec 07	<500	<500	510	...	14%	29%	377	...		153 [d]	44%	...		...	
Papua New Guinea	84	Jan 07–Dec 07	1 900	1 800	2 100	4%	3%	5%	3 621	7 153	4%	25 [d]	1%	60	3%	0	0%
Paraguay	141 [f]	Jan 07–Dec 07	<500	<500	830	...	17%	57%	374	35 000 [d]	23%	86 [d]	19%	42 [d]	9%	54 [d]	12%
Peru	502	Jan 07–Dec 07	1 300	890	1 800	...	28%	56%	...	284 923 [d]	49%	634 [d]	49%	...		...	
Philippines	1	Jan 07–Dec 07	<200	<200	<500	...	<1%	<1%	2	798 [q]	0%	1	1%	0	0%	0	0%
Poland	63	Jan 07–Dec 07	<200	<100	<500	...	26%	85%	63	...		...		...		...	
Romania	68	Jan 07–Dec 07	<500	<200	<500	...	22%	42%	70	81 439	38%	78 [d]	29%	78	29%	156	59%
Russian Federation	6 419	Jan 07–Dec 07	7 300	4 500	11 000	...	59%	>95%	...	3 895 308 [d]	>95%	...		...		...	
Rwanda	6 485 [f]	Jan 07–Dec 07	11 000	9 100	13 000	60%	51%	71%	...	212 501 [k]	51%	5 951 [k]	55%	...		2 564	24%
Saint Kitts and Nevis	...		...			...			...	...		...		...		...	
Saint Lucia	11	Jan 07–Dec 07	...			...			14	...		...		...		...	
Saint Vincent and the Grenadines	...		...			...			...	...		...		...		...	
Samoa	...		...			...			...	...		...		...		...	
Sao Tome and Principe	22	Jan 07–Dec 07	...			...			90	5 492	>95%	24		3 [d]		...	
Senegal	264	Jan 07–Dec 07	4 400	3 000	6 300	...	4%	9%	385	22 770 [d]	5%	...		...		...	
Serbia	2	Jan 06–Dec 06	<100	<100	<200	...	2%	5%	...	7 500 [d]	6%	2 [d]	3%	0 [d]	0%	2 [d]	3%
Seychelles	...		...			...			...	...		...		...		...	
Sierra Leone	919	Jan 07–Dec 07	4 400	3 100	6 200	21%	15%	29%	520	52 258	20%	216	5%	66	2%	0	0%
Slovakia	...		...			...			...	...		...		...		...	
Solomon Islands	...		...			...			...	...		...		...		...	
Somalia	11	Jan 07–Dec 07	940	510	1 700	...	<1%	2%	2 865	...		...		...		0 [d]	0%
South Africa	127 164 [f]	Jan 07–Dec 07	220 000	180 000	260 000	57%	49%	69%	290 000	707 948 [d]	64%	89 962 [d]	41%	...		...	
Sri Lanka	1	Jan 06–Dec 06	<100	<100	<100	...	1%	3%	55	3 200 [d]	1%	1 [d]	2%	1 [d]	2%	0 [d]	0%
Sudan	9 [r]		18 000	12 000	26 000	<1%	<1%	<1%	...	1 608	0%	2	0%	14	0%	0	0%
Suriname	35	Jan 06–Dec 06	<200	<100	<200	...	18%	57%	...	7 156 [d]	80%	...		...		...	

Low- and middle-income countries[a]	Number of pregnant women living with HIV who received antiretrovirals for preventing mother-to-child transmission[b]	Period	Estimated number of pregnant women living with HIV needing antiretrovirals for preventing mother-to-child transmission based on UNAIDS/WHO methods			Estimated percentage of pregnant women living with HIV who received antiretrovirals for preventing mother-to-child transmission[c]			Estimated number of pregnant women living with HIV needing antiretrovirals for preventing mother-to-child transmission based on country report	Pregnant women tested for HIV		Infants born to women living with HIV receiving antiretrovirals for preventing mother-to-child transmission		Infants born to women living with HIV receiving co-trimoxazole prophylaxis within two months of birth		Infants born to women living with HIV receiving a virological test by two months of age	
			Estimate	Low estimate	High estimate	Estimate	Low estimate	High estimate		Reported number	Estimated coverage	Reported number	Estimated coverage	Reported number	Estimated coverage	Reported number	Estimated coverage
Swaziland	8 772	Jan 07–Dec 07	13 000	12 000	15 000	67%	60%	74%	13 178	33 838	>95%	7 376	56%	725 [d]	6%	2 517	19%
Syrian Arab Republic	0	Jan 07–Dec 07	...			...			...	4	0%	0		0		1	
Tajikistan	9	Jan 07–Dec 07	<200	<100	<500	...	2%	11%	438	19 893	11%	9	5%	1	1%	1	1%
Thailand	9 352	Jan 07–Dec 07	10 000	6 400	15 000	...	62%	>95%	6 196	794 406 [s]	85%	6 196 [s]	61%	...		...	
The former Yugoslav Republic of Macedonia	...		...			...			...	...		0		...		...	
Timor-Leste	2	Jan 07–Dec 07	...			...			...	...		...		...		...	
Togo	705	Jan 07–Dec 07	8 000	6 300	10 000	9%	7%	11%	10 329	20 553	8%	749	9%	488	6%	0	0%
Tonga	...		...			...			...	...		...		...		...	
Tunisia	1	Jan 07–Dec 07	<100	<100	<100	...	1%	3%	...	110	0%	1	2%	0	0%	1	2%
Turkey	4	Jan 06–Dec 06	...			...			...	2 070 [d]	0%	4 [d]		0 [d]		0 [d]	
Turkmenistan	0	Jan 06–Dec 06	...			...			...	...		0 [d]		0 [d]		0 [d]	
Tuvalu	...		...			...			...	...		...		...		...	
Uganda	26 484	Jan 07–Dec 07	78 000	68 000	92 000	34%	29%	39%	91 000	476 994	34%	13 914	18%	...		5 437	7%
Ukraine	3 046	Jan 07–Dec 07	5 200	3 800	6 700	...	45%	79%	3 293	624 000	>95%	3 325	63%	3 325	63%	5 605	>95%
United Republic of Tanzania	31 863	Jan 07–Dec 07	100 000	91 000	110 000	32%	29%	35%	114 800	519 287 [i]	33%	21 093 [i]	21%	...		...	
Uruguay	53	Jan 06–Dec 06	<200	<100	<500	...	20%	76%	...	...		68 [d]	51%	70 [d]	52%	70 [d]	52%
Uzbekistan	95	Jan 07–Dec 07	<500	<200	840	...	11%	68%	...	58 063	9%	120	38%	...		...	
Vanuatu	...		...			...			...	...		...		...		...	
Venezuela (Bolivarian Republic of)	310	Jan 06–Dec 06	2 300	1 300	4 600	...	7%	24%	...	...		...		...		...	
Viet Nam	744	Oct 06–Sep 07	3 900	2 400	6 400	...	12%	31%	5 352	138 682	8%	705 [d]	18%	...		...	
Yemen	2	Jan 07–Dec 07	...			...			...	800	0%	2		0		0	
Zambia	35 314	Jan 07–Dec 07	76 000	68 000	86 000	47%	41%	52%	90 252	306 451	65%	15 631	21%	11 884	16%	7 664	10%
Zimbabwe	15 381	Jan 07–Dec 07	52 000	48 000	57 000	29%	27%	32%	16 769	130 429	35%	14 693	28%	9 975	19%	375 [h]	1%

... Data not available or not applicable.
a See country classification by income, level of the epidemic and geographical, UNAIDS, UNICEF and WHO regions.
b Most countries have reported data for a full 12-month period in 2006 or 2007. For the countries with data reported for a period of less than 12 months in 2007, the values are projected to a 12-month period, based on the monthly value (see footnote f). Fifteen countries reported data for 2006. They reflect a 12-month period and the values are therefore not projected.
c The coverage estimates are based on the numbers of pregnant women living with HIV receiving antiretrovirals and the estimated unrounded need for antiretrovirals (based on UNAIDS/WHO methods). The point estimates and ranges are given for countries with a generalized epidemic, whereas only ranges are given for countries with a low or concentrated epidemic.
d The latest reported data are to December 2006.
e Data reported for the period January 2007–October 2007.
f Data were reported from January 2007 but not for the full year to December. The projection to a 12-month period is based on the monthly value (see the table below for the reported values).

Countries for which the numbers of pregnant women living with HIV who received antiretrovirals for preventing mother-to-child transmission are projected

Country	Period	Reported value
Cameroon	Jan 07–Oct 07	6 263
Central African Republic	Jan 07–Jun 07	1 857
Côte d'Ivoire	Jan 07–Jul 07	1 890
Eritrea	Jan 07–Oct 07	140
Gambia	Jan 07–Sep 07	100
Guinea	Jan 07–Sep 07	509
Jamaica	Jan 07–Jun 07	146
Kenya	Jan 07–Jun 07	26 429
Myanmar	Jan 07–Oct 07	1 067
Niger	Jan 07–Jun 07	503
Panama	Jan 07–Sep 07	53
Paraguay	Jan 07–Nov 07	129
Rwanda	Jan 07–Nov 07	5 945
South Africa	Jan 07–Sep 07	95 373

g From 271 programme counties, January–September 2007.
h Data reported for the period September–December 2007.
i Data reported for the period January–September 2007.
j Source: Vishnevskaya-Rostropovich Foundation.
k Data reported for the period January–November 2007.
l Does not include social services and private sector.
m Data reported for the period March 2006–February 2007.
n Data reported for the period January–June 2007.
o Data reported for the period April–September 2007.
p Data reported for the period January–August 2007.
q Data reported for the period July–December 2007.
r Northern Sudan reported 3 for the period August–December 2007, and southern Sudan reported 6 for the period January–December 2007, giving a total of 9.
s Data reported for the period October 2006–September 2007. Adjusted data.

Annex 4. Estimated numbers of people receiving and needing antiretroviral therapy and antiretrovirals for preventing mother-to-child transmission and coverage percentages in low- and middle-income countries by WHO and UNICEF regions, 2007

	Estimated number of people receiving antiretroviral therapy, December 2007 (range)[a]	Estimated number of people needing antiretroviral therapy, 2007 (range)[b]	Antiretroviral therapy coverage, December 2007 (range)[c]	Reported number of children younger than 15 years receiving antiretroviral therapy, 2007	Number of pregnant women living with HIV receiving antiretrovirals for preventing mother-to-child transmission, December 2007	Estimated number of pregnant women living with HIV needing antiretrovirals for preventing mother-to-child transmission, 2007 (range)[b]	Estimated percentage of pregnant women living with HIV receiving antiretrovirals for preventing mother-to-child transmission, 2007 (range)[c]
WHO							
African Region	2 120 000 [1 925 000–2 315 000]	7 000 000 [6 250 000–7 900 000]	30% [27–34%]	158 008	446 000	1 300 000 [1 200 000-1 400 000]	34% [32–37%]
Region of the Americas	390 000 [350 000–430 000]	630 000 [550 000–770 000]	62% [51–70%]	16 571	13 000	36 000 [30 000–45 000]	36% [29–43%]
Eastern Mediterranean Region	7 500 [6 800–8 200]	150 000 [110 000–190 000]	5% [4–7%]	194	<200	24 000 [17 000–33 000]	1% [<1%]
European Region	55 000 [51 000–57 000]	320 000 [240 000–440 000]	17% [13–23%]	2 053	10 000	14 000 [11 000–19 000]	71% [53–91%]
South-East Asia Region	330 000 [290 000–370 000]	1 300 000 [1 000 000–1 700 000]	25% [19–33%]	15 932	20 000	84 000 [54 000–120 000]	24% [17–37%]
Western Pacific Region	89 000 [84 000–94 000]	320 000 [240 000–440 000]	28% [20–37%]	4 822	2 100	16 000 [12 000–21 000]	13% [10–18%]
All low- and middle-income countries	2 990 000 [2 700 000–3 280 000]	9 700 000 [8 700 000–11 000 000]	31% [27–34%]	197 580	491 000	1 500 000 [1 400 000–1 600 000]	33% [31–35%]
UNICEF							
Sub-Saharan Africa	2 120 000 [1 925 000–2 315 000]	7 000 000 [6 250 000–7 900 000]	30% [27–34%]	157 968	446 000	1 300 000 [1 200 000–1 400 000]	34% [32–37%]
Eastern and Southern Africa	1 690 000 [1 560 000–1 820 000]	5 300 000 [4 700 000–6 000 000]	32% [28–36%]	132 427	403 000	930 000 [860 000–1 000 000]	43% [40–47%]
West and Central Africa	430 000 [370 000–490 000]	1 700 000 [1 400 000–2 100 000]	25% [20–31%]	25 541	43 000	390 000 [320 000–450 000]	11% [10–13%]
Latin America and the Caribbean	390 000 [350 000–430 000]	630 000 [550 000–770 000]	62% [51–70%]	16 571	13 000	36 000 [30 000–45 000]	36% [29–43%]
East Asia and the Pacific	260 000 [230 000–290 000]	700 000 [570 000–870 000]	37% [30–46%]	11 815	13 000	34 000 [27 000–44 000]	38% [30–48%]
South Asia	160 000 [140 000–180 000]	950 000 [670 000–1 300 000]	17% [12–24%]	8 960	8 900	69 000 [40 000–97 000]	13% [9–22%]
Middle East and North Africa	7 700 [7 000–8 400]	130 000 [93 000–160 000]	6% [5–8%]	213	<200	21 000 [15 000–29 000]	1% [<1%]
Central and Eastern Europe and the Commonwealth of Independent States[d]	50 000 [47 000–53 000]	310 000 [230 000–420 000]	16% [12–22%]	1 913	10 000	14 000 [10 000–18 000]	71% [56–>95%]
All low- and middle-income countries	2 990 000 [2 700 000–3 280 000]	9 700 000 [8 700 000–11 000 000]	31% [27–34%]	197 440	491 000	1 500 000 [1 400 000-1 600 000]	33% [31–35%]

Note: some groups do not add up to the total due to rounding.

a Data on children – when available – are included.

b For an explanation of the methods used, see the explanatory notes for annexes.

c The coverage estimate is based on the estimated numbers of people receiving and needing antiretroviral therapy. Ranges around the levels of coverage are based on the uncertainty ranges around the estimates of need.

d UNICEF classifies five low- and middle-income countries (Hungary, Latvia, Lithuania, Poland and Slovakia) as industrialized countries, and their values are not included in these totals.

Classification of low- and middle-income countries by income level, epidemic level and geographical, UNAIDS, UNICEF and WHO regions

Country	Classification of economy	Level of epidemic	Geographical region	UNAIDS region	UNICEF region	WHO region
Afghanistan	Low income	Low	East, South and South-East Asia	South and South-East Asia	South Asia	Eastern Mediterranean Region
Albania	Lower middle income	Low	Europe and Central Asia	Western and Central Europe	Central and Eastern Europe and the Commonwealth of Independent States	European Region
Algeria	Lower middle income	Low	Middle East and North Africa	Middle East and North Africa	Middle East and North Africa	African Region
Angola	Lower middle income	Generalized	Sub-Saharan Africa	Sub-Saharan Africa	Eastern and Southern Africa	African Region
Argentina	Upper middle income	Concentrated	Latin America and the Caribbean	Latin America	Latin America and Caribbean	Region of the Americas
Armenia	Lower middle income	Concentrated	Europe and Central Asia	Eastern Europe and Central Asia	Central and Eastern Europe and the Commonwealth of Independent States	European Region
Azerbaijan	Lower middle income	Low	Europe and Central Asia	Eastern Europe and Central Asia	Central and Eastern Europe and the Commonwealth of Independent States	European Region
Bangladesh	Low income	Low	East, South and South-East Asia	South and South-East Asia	South Asia	South-East Asia Region
Belarus	Lower middle income	Concentrated	Europe and Central Asia	Eastern Europe and Central Asia	Central and Eastern Europe and the Commonwealth of Independent States	European Region
Belize	Upper middle income	Concentrated	Latin America and the Caribbean	Latin America	Latin America and Caribbean	Region of the Americas
Benin	Low income	Generalized	Sub-Saharan Africa	Sub-Saharan Africa	West and Central Africa	African Region
Bhutan	Lower middle income	Low	East, South and South-East Asia	South and South-East Asia	South Asia	South-East Asia Region
Bolivia	Lower middle income	Concentrated	Latin America and the Caribbean	Latin America	Latin America and Caribbean	Region of the Americas
Bosnia and Herzegovina	Lower middle income	Low	Europe and Central Asia	Eastern Europe and Central Asia	Central and Eastern Europe and the Commonwealth of Independent States	European Region
Botswana	Upper middle income	Generalized	Sub-Saharan Africa	Sub-Saharan Africa	Eastern and Southern Africa	African Region
Brazil	Upper middle income	Concentrated	Latin America and the Caribbean	Latin America	Latin America and Caribbean	Region of the Americas
Bulgaria	Upper middle income	Low	Europe and Central Asia	Eastern Europe and Central Asia	Central and Eastern Europe and the Commonwealth of Independent States	European Region
Burkina Faso	Low income	Generalized	Sub-Saharan Africa	Sub-Saharan Africa	West and Central Africa	African Region
Burundi	Low income	Generalized	Sub-Saharan Africa	Sub-Saharan Africa	Eastern and Southern Africa	African Region
Cambodia	Low income	Concentrated	East, South and South-East Asia	South and South-East Asia	East Asia and the Pacific	Western Pacific Region
Cameroon	Lower middle income	Generalized	Sub-Saharan Africa	Sub-Saharan Africa	West and Central Africa	African Region
Cape Verde	Lower middle income	Generalized	Sub-Saharan Africa	Sub-Saharan Africa	West and Central Africa	African Region
Central African Republic	Low income	Generalized	Sub-Saharan Africa	Sub-Saharan Africa	West and Central Africa	African Region
Chad	Low income	Generalized	Sub-Saharan Africa	Sub-Saharan Africa	West and Central Africa	African Region
Chile	Upper middle income	Concentrated	Latin America and the Caribbean	Latin America	Latin America and Caribbean	Region of the Americas
China	Lower middle income	Concentrated	East, South and South-East Asia	East Asia	East Asia and the Pacific	Western Pacific Region
Colombia	Lower middle income	Concentrated	Latin America and the Caribbean	Latin America	Latin America and Caribbean	Region of the Americas
Comoros	Low income	Concentrated	Sub-Saharan Africa	Sub-Saharan Africa	Eastern and Southern Africa	African Region
Congo	Low income	Generalized	Sub-Saharan Africa	Sub-Saharan Africa	West and Central Africa	African Region
Cook Islands	Lower middle income		Oceania	Oceania	East Asia and the Pacific	Western Pacific Region
Costa Rica	Upper middle income	Concentrated	Latin America and the Caribbean	Latin America	Latin America and Caribbean	Region of the Americas
Côte d'Ivoire	Low income	Generalized	Sub-Saharan Africa	Sub-Saharan Africa	West and Central Africa	African Region
Croatia	Upper middle income	Low	Europe and Central Asia	Eastern Europe and Central Asia	Central and Eastern Europe and the Commonwealth of Independent States	European Region
Cuba	Lower middle income	Low	Latin America and the Caribbean	Caribbean	Latin America and Caribbean	Region of the Americas

Country	Classification of economy	Level of epidemic	Geographical region	UNAIDS region	UNICEF region	WHO region
Democratic People's Republic of Korea	Not a World Bank member	Low	East, South and South-East Asia	East Asia	East Asia and the Pacific	South-East Asia Region
Democratic Republic of the Congo	Low income	Generalized	Sub-Saharan Africa	Sub-Saharan Africa	West and Central Africa	African Region
Djibouti[a]	Lower middle income	Generalized	Sub-Saharan Africa	Sub-Saharan Africa	Middle East and North Africa	Eastern Mediterranean Region
Dominica	Upper middle income		Latin America and the Caribbean	Caribbean	Latin America and Caribbean	Region of the Americas
Dominican Republic	Lower middle income	Concentrated	Latin America and the Caribbean	Caribbean	Latin America and Caribbean	Region of the Americas
Ecuador	Lower middle income	Concentrated	Latin America and the Caribbean	Latin America	Latin America and Caribbean	Region of the Americas
Egypt	Lower middle income	Low	Middle East and North Africa	Middle East and North Africa	Middle East and North Africa	Eastern Mediterranean Region
El Salvador	Lower middle income	Concentrated	Latin America and the Caribbean	Latin America	Latin America and Caribbean	Region of the Americas
Equatorial Guinea	Upper middle income	Generalized	Sub-Saharan Africa	Sub-Saharan Africa	West and Central Africa	African Region
Eritrea	Low income	Generalized	Sub-Saharan Africa	Sub-Saharan Africa	Eastern and Southern Africa	African Region
Ethiopia	Low income	Generalized	Sub-Saharan Africa	Sub-Saharan Africa	Eastern and Southern Africa	African Region
Fiji	Lower middle income	Low	Oceania	Oceania	East Asia and the Pacific	Western Pacific Region
Gabon	Upper middle income	Generalized	Sub-Saharan Africa	Sub-Saharan Africa	West and Central Africa	African Region
Gambia	Low income	Concentrated	Sub-Saharan Africa	Sub-Saharan Africa	West and Central Africa	African Region
Georgia	Lower middle income	Low	Europe and Central Asia	Eastern Europe and Central Asia	Central and Eastern Europe and the Commonwealth of Independent States	European Region
Ghana	Low income	Generalized	Sub-Saharan Africa	Sub-Saharan Africa	West and Central Africa	African Region
Grenada	Upper middle income		Latin America and the Caribbean	Caribbean	Latin America and Caribbean	Region of the Americas
Guatemala	Lower middle income	Concentrated	Latin America and the Caribbean	Latin America	Latin America and Caribbean	Region of the Americas
Guinea	Low income	Generalized	Sub-Saharan Africa	Sub-Saharan Africa	West and Central Africa	African Region
Guinea-Bissau	Low income	Generalized	Sub-Saharan Africa	Sub-Saharan Africa	West and Central Africa	African Region
Guyana	Lower middle income	Concentrated	Latin America and the Caribbean	Latin America	Latin America and Caribbean	Region of the Americas
Haiti	Low income	Generalized	Latin America and the Caribbean	Caribbean	Latin America and Caribbean	Region of the Americas
Honduras	Lower middle income	Concentrated	Latin America and the Caribbean	Latin America	Latin America and Caribbean	Region of the Americas
Hungary	Upper middle income	Low	Europe and Central Asia	Western and Central Europe	Industrialized countries	European Region
India	Low income	Concentrated	East, South and South-East Asia	South and South-East Asia	South Asia	South-East Asia Region
Indonesia	Lower middle income	Concentrated	East, South and South-East Asia	South and South-East Asia	East Asia and the Pacific	South-East Asia Region
Iran (Islamic Republic of)	Lower middle income	Low	East, South and South-East Asia	South and South-East Asia	Middle East and North Africa	Eastern Mediterranean Region
Iraq	Lower middle income	Low	Middle East and North Africa	Middle East and North Africa	Middle East and North Africa	Eastern Mediterranean Region
Jamaica	Lower middle income	Concentrated	Latin America and the Caribbean	Caribbean	Latin America and Caribbean	Region of the Americas
Jordan	Lower middle income	Low	Middle East and North Africa	Middle East and North Africa	Middle East and North Africa	Eastern Mediterranean Region
Kazakhstan	Upper middle income	Concentrated	Europe and Central Asia	Eastern Europe and Central Asia	Central and Eastern Europe and the Commonwealth of Independent States	European Region
Kenya	Low income	Generalized	Sub-Saharan Africa	Sub-Saharan Africa	Eastern and Southern Africa	African Region
Kiribati	Lower middle income		Oceania	Oceania	East Asia and the Pacific	Western Pacific Region
Kyrgyzstan	Low income	Low	Europe and Central Asia	Eastern Europe and Central Asia	Central and Eastern Europe and the Commonwealth of Independent States	European Region
Lao People's Democratic Republic	Low income	Low	East, South and South-East Asia	South and South-East Asia	East Asia and the Pacific	Western Pacific Region
Latvia	Upper middle income	Concentrated	Europe and Central Asia	Eastern Europe and Central Asia	Industrialized countries	European Region

Country	Classification of economy	Level of epidemic	Geographical region	UNAIDS region	UNICEF region	WHO region
Lebanon	Upper middle income	Low	Middle East and North Africa	Middle East and North Africa	Middle East and North Africa	Eastern Mediterranean Region
Lesotho	Lower middle income	Generalized	Sub-Saharan Africa	Sub-Saharan Africa	Eastern and Southern Africa	African Region
Liberia	Low income	Generalized	Sub-Saharan Africa	Sub-Saharan Africa	West and Central Africa	African Region
Libyan Arab Jamahiriya	Upper middle income	Low	Middle East and North Africa	Middle East and North Africa	Middle East and North Africa	Eastern Mediterranean Region
Lithuania	Upper middle income	Low	Europe and Central Asia	Eastern Europe and Central Asia	Industrialized countries	European Region
Madagascar	Low income	Concentrated	Sub-Saharan Africa	Sub-Saharan Africa	Eastern and Southern Africa	African Region
Malawi	Low income	Generalized	Sub-Saharan Africa	Sub-Saharan Africa	Eastern and Southern Africa	African Region
Malaysia	Upper middle income	Concentrated	East, South and South-East Asia	South and South-East Asia	East Asia and the Pacific	Western Pacific Region
Maldives	Lower middle income	Low	East, South and South-East Asia	South and South-East Asia	South Asia	South-East Asia Region
Mali	Low income	Concentrated	Sub-Saharan Africa	Sub-Saharan Africa	West and Central Africa	African Region
Marshall Islands	Lower middle income		Oceania	Oceania	East Asia and the Pacific	Western Pacific Region
Mauritania	Low income	Concentrated	Sub-Saharan Africa	Sub-Saharan Africa	West and Central Africa	African Region
Mauritius	Upper middle income	Concentrated	Sub-Saharan Africa	Sub-Saharan Africa	Eastern and Southern Africa	African Region
Mexico	Upper middle income	Concentrated	Latin America and the Caribbean	Latin America	Latin America and Caribbean	Region of the Americas
Micronesia (Federated States of)	Lower middle income		Oceania	Oceania	East Asia and the Pacific	Western Pacific Region
Moldova	Lower middle income	Concentrated	Europe and Central Asia	Eastern Europe and Central Asia	Central and Eastern Europe and the Commonwealth of Independent States	European Region
Mongolia	Low income	Low	East, South and South-East Asia	East Asia	East Asia and the Pacific	Western Pacific Region
Montenegro	Upper middle income	Low	Europe and Central Asia	Western and Central Europe	Central and Eastern Europe and the Commonwealth of Independent States	European Region
Morocco	Lower middle income	Low	Middle East and North Africa	Middle East and North Africa	Middle East and North Africa	Eastern Mediterranean Region
Mozambique	Low income	Generalized	Sub-Saharan Africa	Sub-Saharan Africa	Eastern and Southern Africa	African Region
Myanmar	Low income	Concentrated	East, South and South-East Asia	South and South-East Asia	East Asia and the Pacific	South-East Asia Region
Namibia	Lower middle income	Generalized	Sub-Saharan Africa	Sub-Saharan Africa	Eastern and Southern Africa	African Region
Nauru	Not a World Bank member		Oceania	Oceania	East Asia and the Pacific	Western Pacific Region
Nepal	Low income	Concentrated	East, South and South-East Asia	South and South-East Asia	South Asia	South-East Asia Region
Nicaragua	Lower middle income	Concentrated	Latin America and the Caribbean	Latin America	Latin America and Caribbean	Region of the Americas
Niger	Low income	Concentrated	Sub-Saharan Africa	Sub-Saharan Africa	West and Central Africa	African Region
Nigeria	Low income	Generalized	Sub-Saharan Africa	Sub-Saharan Africa	West and Central Africa	African Region
Niue	Not a World Bank member		Oceania	Oceania	East Asia and the Pacific	Western Pacific Region
Oman	Upper middle income	Low	Middle East and North Africa	Middle East and North Africa	Middle East and North Africa	Eastern Mediterranean Region
Pakistan	Low income	Low	East, South and South-East Asia	South and South-East Asia	South Asia	Eastern Mediterranean Region
Palau	Upper middle income		Oceania	Oceania	East Asia and the Pacific	Western Pacific Region
Panama	Upper middle income	Concentrated	Latin America and the Caribbean	Latin America	Latin America and Caribbean	Region of the Americas
Papua New Guinea	Low income	Generalized	East, South and South-East Asia	Oceania	East Asia and the Pacific	Western Pacific Region
Paraguay	Lower middle income	Concentrated	Latin America and the Caribbean	Latin America	Latin America and Caribbean	Region of the Americas
Peru	Lower middle income	Concentrated	Latin America and the Caribbean	Latin America	Latin America and Caribbean	Region of the Americas
Philippines	Lower middle income	Low	East, South and South-East Asia	South and South-East Asia	East Asia and the Pacific	Western Pacific Region

Country	Classification of economy	Level of epidemic	Geographical region	UNAIDS region	UNICEF region	WHO region
Poland	Upper middle income	Concentrated	Europe and Central Asia	Western and Central Europe	Industrialized countries	European Region
Romania	Upper middle income	Low	Europe and Central Asia	Eastern Europe and Central Asia	Central and Eastern Europe and the Commonwealth of Independent States	European Region
Russian Federation	Upper middle income	Concentrated	Europe and Central Asia	Eastern Europe and Central Asia	Central and Eastern Europe and the Commonwealth of Independent States	European Region
Rwanda	Low income	Generalized	Sub-Saharan Africa	Sub-Saharan Africa	Eastern and Southern Africa	African Region
Saint Kitts and Nevis	Upper middle income		Latin America and the Caribbean	Caribbean	Latin America and Caribbean	Region of the Americas
Saint Lucia	Upper middle income		Latin America and the Caribbean	Caribbean	Latin America and Caribbean	Region of the Americas
Saint Vincent and the Grenadines	Upper middle income		Latin America and the Caribbean	Caribbean	Latin America and Caribbean	Region of the Americas
Samoa	Lower middle income		Oceania	Oceania	East Asia and the Pacific	Western Pacific Region
Sao Tome and Principe	Low income		Sub-Saharan Africa	Sub-Saharan Africa	West and Central Africa	African Region
Senegal	Low income	Concentrated	Sub-Saharan Africa	Sub-Saharan Africa	West and Central Africa	African Region
Serbia	Upper middle income	Low	Europe and Central Asia	Eastern Europe and Central Asia	Central and Eastern Europe and the Commonwealth of Independent States	European Region
Seychelles	Upper middle income		Sub-Saharan Africa	Sub-Saharan Africa	Eastern and Southern Africa	African Region
Sierra Leone	Low income	Generalized	Sub-Saharan Africa	Sub-Saharan Africa	West and Central Africa	African Region
Slovakia	Upper middle income	Low	Europe and Central Asia	Western and Central Europe	Industrialized countries	European Region
Solomon Islands	Low income		Oceania	Oceania	East Asia and the Pacific	Western Pacific Region
Somalia	Low income	Concentrated	Sub-Saharan Africa	Sub-Saharan Africa	Eastern and Southern Africa	Eastern Mediterranean Region
South Africa	Upper middle income	Generalized	Sub-Saharan Africa	Sub-Saharan Africa	Eastern and Southern Africa	African Region
Sri Lanka	Lower middle income	Low	East, South and South-East Asia	South and South-East Asia	South Asia	South-East Asia Region
Sudan	Low income	Generalized	Middle East and North Africa	Middle East and North Africa	Middle East and North Africa	Eastern Mediterranean Region
Suriname	Lower middle income	Concentrated	Latin America and the Caribbean	Latin America	Latin America and Caribbean	Region of the Americas
Swaziland	Lower middle income	Generalized	Sub-Saharan Africa	Sub-Saharan Africa	Eastern and Southern Africa	African Region
Syrian Arab Republic	Lower middle income	Low	Middle East and North Africa	Middle East and North Africa	Middle East and North Africa	Eastern Mediterranean Region
Tajikistan	Low income	Low	Europe and Central Asia	Eastern Europe and Central Asia	Central and Eastern Europe and the Commonwealth of Independent States	European Region
Thailand	Lower middle income	Concentrated	East, South and South-East Asia	South and South-East Asia	East Asia and the Pacific	South-East Asia Region
The former Yugoslav Republic of Macedonia	Lower middle income	Low	Europe and Central Asia	Western and Central Europe	Central and Eastern Europe and the Commonwealth of Independent States	European Region
Timor-Leste	Low income	Low	East, South and South-East Asia	East, South and South-East Asia	East Asia and the Pacific	South-East Asia Region
Togo	Low income	Generalized	Sub-Saharan Africa	Sub-Saharan Africa	West and Central Africa	African Region
Tonga	Lower middle income		Oceania	Oceania	East Asia and the Pacific	Western Pacific Region
Tunisia	Lower middle income	Low	Middle East and North Africa	Middle East and North Africa	Middle East and North Africa	Eastern Mediterranean Region
Turkey	Upper middle income	Low	Middle East and North Africa	Middle East and North Africa	Central and Eastern Europe and the Commonwealth of Independent States	European Region
Turkmenistan	Lower middle income	Low	Europe and Central Asia	Eastern Europe and Central Asia	Central and Eastern Europe and the Commonwealth of Independent States	European Region
Tuvalu	Not a World Bank member		Oceania	Oceania	East Asia and the Pacific	Western Pacific Region
Uganda	Low income	Generalized	Sub-Saharan Africa	Sub-Saharan Africa	Eastern and Southern Africa	African Region
Ukraine	Lower middle income	Concentrated	Europe and Central Asia	Eastern Europe and Central Asia	Central and Eastern Europe and the Commonwealth of Independent States	European Region
United Republic of Tanzania	Low income	Generalized	Sub-Saharan Africa	Sub-Saharan Africa	Eastern and Southern Africa	African Region
Uruguay	Upper middle income	Concentrated	Latin America and the Caribbean	Latin America	Latin America and Caribbean	Region of the Americas

Country	Classification of economy	Level of epidemic	Geographical region	UNAIDS region	UNICEF region	WHO region
Uzbekistan	Low income	Concentrated	Europe and Central Asia	Eastern Europe and Central Asia	Central and Eastern Europe and the Commonwealth of Independent States	European Region
Vanuatu	Lower middle income		Oceania	Oceania	East Asia and the Pacific	Western Pacific Region
Venezuela (Bolivarian Republic of)	Upper middle income	Concentrated	Latin America and the Caribbean	Latin America	Latin America and Caribbean	Region of the Americas
Viet Nam	Low income	Concentrated	East, South and South-East Asia	South and South-East Asia	East Asia and the Pacific	Western Pacific Region
Yemen	Low income	Low	Middle East and North Africa	Middle East and North Africa	Middle East and North Africa	Eastern Mediterranean Region
Zambia	Low income	Generalized	Sub-Saharan Africa	Sub-Saharan Africa	Eastern and Southern Africa	African Region
Zimbabwe	Low income	Generalized	Sub-Saharan Africa	Sub-Saharan Africa	Eastern and Southern Africa	African Region

a For the analysis throughout the report, values for Djibouti have been included in sub-Saharan Africa based on UNAIDS classification, while UNICEF and WHO classify Djibouti under Middle East and North Africa, and Eastern Mediterranean Region respectively.

STATISTICAL ANNEXES: EXPLANATORY NOTES

Data collection and validation

Annexes 1–3 present country data related to two priority health sector interventions for HIV: antiretroviral therapy and the prevention of mother-to-child transmission.

The data presented in these annexes were collected through three international monitoring and reporting processes.

1) Health sector response to HIV/AIDS (WHO)

At the Fifty-ninth World Health Assembly in 2006, countries mandated WHO to monitor and report annually on the global health sector response to HIV/AIDS in recognition of the fundamental importance of the health sector in achieving universal access. WHO sent an annual questionnaire to its regional and country offices in the fourth quarter of 2007 to collect data on key indicators related to the availability, coverage and impact of priority health sector interventions for HIV *(1)*. Annexes 1–3 present data on selected interventions received from 143 countries by April 2008.

2) Prevention of mother-to-child transmission and HIV care and treatment for children (Interagency Task Team on Prevention of HIV Infection in Pregnant Women, Mothers and their Children)

Since 2004, UNICEF and WHO, on behalf of the Interagency Task Team on Prevention of HIV Infection in Pregnant Women, Mothers and their Children (see Box 5.1), have been jointly tasked with collecting national data to track progress towards goals for preventing mother-to-child transmission and HIV care and treatment for children *(2)*. An annual reporting form (Report Card on Prevention of Mother-to-Child Transmission of HIV and Paediatric HIV Care and Treatment in Low- and Middle-income Countries) was sent to UNICEF and WHO country offices in December 2007, to facilitate data collection in collaboration with national governments and other in-country implementing partners. By April 2008, 109 low- and middle-income countries had provided data.

3) Declaration of Commitment on HIV/AIDS (UNAIDS)

With the adoption of the Declaration of Commitment on HIV/AIDS by the United Nations General Assembly Special Session on HIV/AIDS in 2001, countries committed to providing a progress report to the General Assembly every two years. The UNAIDS Secretariat facilitates this reporting and develops regular reports for submission to the Secretary-General of the United Nations. As of March 2008, 147 countries had submitted country progress reports to UNAIDS based on international guidelines on the construction of core indicators *(3)*.

All three processes are linked through common indicators and a harmonized timeline for reporting. To facilitate collaboration at the country level, the country offices of WHO, UNICEF and UNAIDS worked jointly with national counterparts and partner agencies to collate and validate data in a single collaborative consultation process.

In addition, an international data reconciliation meeting was organized in February 2008 to review and validate data reported to WHO, UNICEF, the UNAIDS Secretariat, the Global Fund to Fight AIDS, Tuberculosis and Malaria, the United States President's Emergency Plan for AIDS Relief and MEASURE DHS (a project of demographic and health surveys supported by the United States Agency for International Development). When discrepancies were identified between data reported to the different organizations, follow-up letters were sent to UNAIDS, UNICEF and WHO country offices to liaise with national authorities to seek clarification and resolve the discrepancies. The analysis discussed in this report uses reconciled data values.

Explanatory notes for Annexes 1 and 2

Annexes 1 and 2 present country data on access to antiretroviral therapy.

Annex 1 provides country-specific data on the scaling up of antiretroviral therapy at the national level for all age groups in 149 low- and middle-income countries.

Annex 2 provides data on access to antiretroviral therapy disaggregated by sex and by age (adults constituting the age group 15 years and older and children constituting the age group younger than 15 years). For most countries, this disaggregation relates only to the public sector. Data on the number of children receiving antiretroviral therapy are available for 128 countries. For 27 of these 128 countries, more recent data on the number of children receiving antiretroviral therapy (which were not reported as part of the data breakdown by age group) were also available. Annex 2 includes these data (footnote b).

Number of people receiving antiretroviral therapy

This report provides the most recent reported data on the number of people receiving antiretroviral therapy and the estimated number of people receiving antiretroviral therapy in December 2007 in low- and middle-income countries. The report also presents the most recent reported data on the number of people receiving antiretroviral therapy in high-income countries.

The reported data were compiled from the most recent reports (see above) received by WHO and/or UNAIDS from health ministries or from other reliable sources in the countries, such as bilateral partners, foundations and nongovernmental agencies that are major providers of treatment services. WHO and UNAIDS work with countries to obtain as many facility-specific data as possible on the numbers of people receiving treatment.

The estimated number of people receiving antiretroviral therapy at the end of 2007 is derived through two processes: projections to the end of the year for countries that did not report data for December 2007 and analysis of the uncertainty related to these data.

End-of-year estimates are based on simple linear projections of reported numbers, using monthly increases to indicate growth. Of the 149 low- and middle-income countries, 104 countries provided data for December 2007 and hence no projections were necessary. Twenty-two countries provided updates for September 2007 or later, and hence projections of 1–3 months were made to December 2007. Together these 126 countries represent 96% of the total estimated number of people receiving antiretroviral therapy as of December 2007 in low- and middle-income countries. Among the remaining countries, five provided updates for a month between May and August 2007, and the data were extrapolated to December 2007. For 14 countries, data were available only for 2006 and, for one country, only for 2005. Projections were made for only nine of these countries (insufficient data were available for the other five countries). No data were available from four countries.

No projections to December 2007 were made for high-income countries because of the lack of an adequate number of recent data points on which to base extrapolation.

Estimating the number of people receiving antiretroviral therapy involves some uncertainty for countries that have not yet established regular reporting systems that can capture data on people who initiate treatment for the first time, rates of adherence among people who receive treatment, people who discontinue treatment, people lost to follow-up and deaths. A particular source of uncertainty is that, in some cases, country-reported figures do not distinguish between people who have ever started antiretroviral therapy and those who are still receiving it (continuing to pick up their medicine). The difference between the two numbers reflects discontinuation of treatment, losses to follow-up and mortality.

Uncertainty may also arise because of the difficulty in measuring the extent of treatment provision in the private sector. Many people receive treatment through local pharmacies and private clinics that do not report through official channels. Private companies may have programmes to support the provision of treatment to workers with advanced HIV disease, but in some cases the data relating to these programmes are not reported to the public health authorities.

Because of such uncertainties involved in estimating the overall number of people receiving antiretroviral therapy in a country, Annex 1 indicates uncertainty ranges around the estimates derived for December 2007. For reported data on the number of people receiving antiretroviral therapy through the public sector, uncertainty ranges from 5% to 25% have been used, depending on the strength of the monitoring system and the comprehensiveness of the reported data *(4)*. The same ranges have been used for countries reporting data on the public and private sectors combined. For data on the number of people receiving antiretroviral therapy through the private sector, which were reported separately in some countries, uncertainty ranges from 10% to 40% have been used. Annex 1 provides private-sector data in a table in the footnotes.

Annex 1 also presents an update of data on the number of people receiving antiretroviral therapy in 2006 published in the previous progress report *(5)* as more recent reported treatment data for December 2006 became available through the interagency data reconciliation process in 2007 described above. The updated global number of people receiving antiretroviral therapy at the end of 2006 is therefore 2 040 000 [1 850 000–2 230 000] instead of 2 015 000 [1 795 000–2 235 000] as previously published.

Estimating treatment need

UNAIDS and WHO have developed a standard method for estimating the size and course of the HIV epidemic, including estimates of the number of people living with HIV, new HIV infections, deaths attributable to AIDS and treatment need *(6,7)*.

The number of people who need antiretroviral therapy in a country is estimated using statistical modelling methods that include all people who meet criteria for initiating treatment, whether or not these people know their HIV status and their eligibility for antiretroviral therapy (see Box 2.1).

WHO recommends that, in resource-limited settings, adults and children living with HIV should start antiretroviral therapy when the infection has been confirmed and there are signs of clinically advanced disease *(6–8)*. The number of adults with advanced HIV infection who should start treatment is estimated based on the assumption that the average time from HIV seroconversion to eligibility for antiretroviral therapy is eight years and, without antiretroviral therapy, the average time from eligibility to death is about three years. These parameters were revised in 2007: the previous estimates were based on the assumption of seven years from seroconversion to eligibility and two years from eligibility to death in absence of treatment.

The total number of people needing antiretroviral therapy is calculated by adding the estimated number of people eligible for antiretroviral therapy to the number who were receiving treatment in the previous year and survived into the current year.

Annex 1 provides country estimates of treatment need in 2007 based on standard UNAIDS/WHO methods, including uncertainty ranges.[1] Some countries have developed their own methods of estimating the number of people who need antiretroviral therapy, which could differ from estimates derived using UNAIDS/WHO methods. It is not always clear how these country estimates have been generated. For example, in some cases they are based only on registered HIV cases and therefore do not account for people with HIV who are unaware of their HIV status. Annex 3 presents country-generated estimates of need based on individual country methods, but these are not aggregated and are not used for calculating and analysing regional and global coverage.

Antiretroviral therapy coverage

The estimates of antiretroviral therapy coverage presented in Annex 1 were calculated by dividing the estimated number of people receiving antiretroviral therapy as of December 2007 by the number of people estimated to need treatment in 2007 (based on UNAIDS/WHO methods). Ranges around the levels of coverage are based on the uncertainty ranges around the estimates of need *(10)*. When need is less than 500 people, no point estimate for coverage is provided.

Explanatory notes for Annex 3

Prevention of mother-to-child transmission

Annex 3 provides data on indicators collected through the 2007 Report Card on Prevention of Mother-to-Child Transmission of HIV and Paediatric HIV Care and Treatment in Low- and Middle-income Countries.[2]

Number of pregnant women living with HIV receiving antiretrovirals for preventing mother-to-child transmission

The number of pregnant women living with HIV receiving antiretrovirals for preventing mother-to-child transmission is based on national programme data aggregated from facilities or other service delivery sites and as reported by the country. Of 149 low- and middle-income countries, 91 countries reported data for the full calendar year in 2007, 15 countries for the full calendar year in 2006 and 3 countries for a 12-month period but not from January to December. Fourteen countries reported data from January 2007 but not for the full year to December. For these 14 countries, simple linear projections of reported numbers were calculated based on the monthly value. The data for Sudan comprise the data for northern and southern Sudan, which reported for different reporting periods. Twenty-five countries did not report data.

Estimating the number of pregnant women living with HIV who need antiretrovirals for preventing mother-to-child transmission

The number of pregnant women living with HIV who need antiretroviral medicine for preventing mother-to-child transmission is estimated using standardized statistical modelling based on UNAIDS/WHO methods that consider various epidemic and demographic parameters and national programme coverage of antiretroviral therapy in the country (such as HIV prevalence among women of reproductive age, effect of HIV on fertility and antiretroviral therapy coverage).[3] These statistical modelling procedures are used to derive a comprehensive population-based estimate of the number of all pregnant women living with HIV who need antiretrovirals for preventing mother-to-child transmission in the country.

Similar to the estimates on antiretroviral therapy need presented in Annex 1, Annex 3 presents uncertainty ranges around the estimated population needing antiretrovirals to prevent mother-to-child transmission of HIV and, accordingly, the coverage of pregnant women living with HIV receiving antiretrovirals for preventing mother-to-child transmission.

Coverage of pregnant women living with HIV receiving antiretrovirals for preventing mother-to-child transmission

The coverage of antiretrovirals for preventing mother-to-child transmission of HIV is calculated by dividing the number of pregnant women living with HIV who received antiretrovirals for preventing mother-to-child transmission of HIV by the estimated number of pregnant women living with HIV who need antiretrovirals for preventing mother-to-child transmission in the country.

Estimates of coverage are based on the standardized estimates of pregnant women living with HIV who need antiretrovirals for preventing mother-to-child transmission derived using UNAIDS/WHO methods. Ranges around the levels of coverage are based on the uncertainty ranges around the estimates of need. Point estimates and ranges are given for countries with a generalized epidemic, whereas only ranges are given for countries with a concentrated epidemic. In general, the uncertainty around the estimates of need for preventing mother-to-child transmission in countries with a concentrated epidemic does not allow for releasing point estimates. See the classification of countries by level of income, HIV epidemic and geographical distribution for further information.

1 Revised estimates of antiretroviral therapy coverage in 2006 (based on updated parameters for estimating treatment need) are published in *World health statistics 2008 (9)*.
2 Data for 2004–2006 collected through the same process are also published in other reports *(11–13)*.
3 The reports of the UNAIDS Reference Group on Estimates, Modelling and Projections *(14)* provide further information on this method.

Some countries have developed their own methods of estimating the number of pregnant women living with HIV who need antiretroviral medicine to prevent mother-to-child transmission, which could differ from estimates derived using UNAIDS/WHO methods. It is not always clear how these specific country estimates have been generated. In some cases, they are based only on pregnant women attending antenatal care or maternal health services and therefore do not account for pregnant women who are unaware of their HIV status. Annex 3 presents country estimates of need based on individual country methods, but these are not aggregated and are not used for calculating and analysing regional and global coverage.

In addition, Annex 3 also presents data on the following indicators:

- the number and percentage of pregnant women tested for HIV
- the number and percentage of infants born to women living with HIV receiving antiretrovirals for preventing mother-to-child transmission;
- the number and percentage of infants born to women living with HIV receiving co-trimoxazole within two months of birth; and
- the number and percentage of infants born to women living with HIV receiving a virological test by two months.

Explanatory notes on the classification of countries by income, HIV epidemic level and geographical region

Classification by income

Unless stated otherwise, all data analysis in this report is based on data from 149 countries classified as low and middle income by the World Bank as of July 2007 *(15)*.

Economies are classified as low, middle or high income according to gross national income per capita in 2007, calculated using the World Bank Atlas method (to reduce the effect of exchange-rate fluctuation). The groups are: low income, US $905 or less; lower-middle income, US$ 906 to US$ 3595; upper-middle income, US$ 3596 to US$ 11 115; and high income, US$ 11 116 or more.

Classification by HIV epidemic level

HIV epidemics are categorized as low-level, concentrated and generalized based on the following principles and numerical proxies:

Low-level

- *Principle*: Although HIV infection may have existed for many years, it has never spread tosignificant levels in any sub-population. Recorded infection is largely confined to individuals with higher risk behaviour: e.g. sex workers, drug injectors, men having sex with other men. This epidemic state suggests that networks of risk are rather diffuse (with low levels of partner exchange or sharing of drug injecting equipment), or that the virus has been introduced only very recently.
- *Numerical proxy*: HIV prevalence has not consistently exceeded five percent in any defined sub-population.

Concentrated

- *Principle*: HIV has spread rapidly in a defined sub-population, but is not well-established in the general population. This epidemic state suggests active networks of risk within the sub-population. The future course of the epidemic is determined by the frequency and nature of links between highly infected sub-populations and the general population.
- *Numerical proxy*: HIV prevalence consistently over five percent in at least one defined subpopulation. HIV prevalence below one percent in pregnant women in urban areas.

Generalized

- *Principle*: In generalized epidemics, HIV is firmly established in the general population. Although sub-populations at high risk may continue to contribute disproportionately to the spread of HIV, sexual networking in the general population is sufficient to sustain an epidemic independent of sub-populations at higher risk of infection.
- *Numerical proxy*: HIV prevalence consistently over one percent in pregnant women.

This classification is currently under review by the UNAIDS Reference Group on Estimates, Modelling and Projections.

Classification by geographical region

This report presents data on 149 low- and middle-income countries by geographical region. The geographical regions are based on UNAIDS regions.[4] East, South and South-East Asia combines two UNAIDS regions as does Latin America and the Caribbean. The 149 countries are therefore categorized as follows: sub-Saharan Africa (*n* = 47); Latin America and the Caribbean (*n* = 29); East, South and South-East Asia (*n* = 21); Eastern Europe and Central Asia (*n* = 25); and the Middle East and North Africa (*n* = 13). In Oceania (*n* = 14), only Fiji and Papua New Guinea reported data. For this report, the values for Oceania are included in East, South and South-East Asia.

4 UNAIDS brings together the efforts and resources of 10 United Nations System organizations in the response to HIV. The 10 UNAIDS Cosponsors are:

- Office of the United Nations High Commissioner for Refugees (UNHCR);
- United Nations Children's Fund (UNICEF);
- World Food Programme (WFP);
- United Nations Development Programme (UNDP);
- United Nations Population Fund (UNFPA);
- United Nations Office on Drugs and Crime (UNODC);
- International Labour Organization (ILO);
- United Nations Educational, Scientific and Cultural Organization (UNESCO);
- World Health Organization (WHO); and
- World Bank.

WHO has 193 Member States grouped in six regions, and 149 WHO Member States are low- and middle-income countries: WHO African Region (n = 46); WHO Region of the Americas (n = 29); WHO Eastern Mediterranean Region (n = 16); WHO European Region (n = 26); WHO South-East Asia Region (n = 11); and WHO Western Pacific Region (n = 21)). Annex 1 lists the remaining 44 high-income countries in the second section.

UNICEF groups the 149 low- and middle-income countries into seven regions: Eastern and Southern Africa (n = 22); West and Central Africa (n = 24); East Asia and the Pacific (n = 26); Latin America and the Caribbean (n = 29); South Asia (n = 8); Middle East and North Africa (n = 14); and Central and Eastern Europe and the Commonwealth of Independent States (n = 21). Five middle-income countries are classified as being industrialized.

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ACKNOWLEDGEMENTS

This report would not have been possible without the collaboration and contribution of health ministries and national AIDS programmes that lead the work on HIV surveillance, monitoring and evaluation and research at the country level. WHO, UNICEF and UNAIDS also thank MEASURE DHS for providing access to data from country surveys for use in this report. Special thanks are due to Rodney Kort for writing, David Breuer for technical editing and L'IV Com for graphic design and layout.

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ISBN 9 789241 596886