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Scaling up HIV services for women and children in the health sector

Progress Report **2009**



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KEY FINDINGS

- National political commitments to expand HIV prevention, treatment and care services for women and children have intensified in recent years. In 2008, 70 low- and middle-income countries had established a national scale-up plan with population-based targets to prevent mother-to-child transmission of HIV; up from 34 in 2005. Similarly, 54 low- and middle-income countries had national plans incorporating population-based targets to scale up paediatric HIV services in 2008, as compared with 19 in 2005.
- HIV testing and counselling among pregnant women is increasing with the expansion of provider-initiated approaches in health care settings. In 2008, 21% of pregnant women giving birth in low- and middle-income countries received an HIV test, up from 15% in 2007. In sub-Saharan Africa, the corresponding percentage increased from 17% to 28%, with specially high rates of increase in countries in Eastern and Southern Africa.
- The percentage of HIV-positive pregnant women who received antiretrovirals to prevent HIV transmission to their children increased from 35% [29-44%] in 2007 to 45% [37-57%] in 2008. Within sub-Saharan Africa, countries in Eastern and Southern Africa reported substantial progress, reaching a coverage of 58% [47-76%] in 2008. The coverage of infant antiretroviral prophylaxis also increased, reaching 32% in 2008, up from 20% in 2007.
- More low- and middle-income countries provided data on the distribution of antiretroviral drug regimens received by HIV-positive pregnant women in 2008 than in previous years and provide evidence of a shift towards the use of more efficacious regimens. In 97 reporting countries, around 31% of women receiving antiretrovirals to prevent mother-to-child transmission were given a single-dose regimen, as compared to 49% in 2007.
- Around one-third (34%) of pregnant women who tested positive for HIV were assessed, either clinically or by CD4 cell count, for eligibility to receive antiretroviral therapy for their own health in 2008. The percentage of those who were assessed using a CD4 cell count increased from 12% in 2007 to 24% in 2008.
- HIV-positive mothers need to balance competing risks associated with different infant feeding options. Data on infant feeding practices of women living with HIV are limited; however 12 population-based surveys in sub-Saharan Africa undertaken between 2003 and 2006 indicate that 31% of HIV-positive women and 38% of HIV-negative women exclusively breastfed their infants up to six months of age.
- Rates of early virological testing of HIV-exposed infants remain low. In 41 reporting countries, only 15% of children born to HIV-positive mothers received an HIV test within the first two months of life. Better follow-up of known HIV-exposed infants is needed to identify HIV infection and provide the necessary care and treatment.
- The number of health facilities providing paediatric antiretroviral therapy in low- and middle-income countries increased by around 80% from 2007 to 2008. The number of children receiving antiretroviral therapy increased from 198 000 in 2007 to about 275 700 in 2008, reaching 38% [31-47%] of the 730 000 [580 000-880 000] children estimated to be in need of antiretroviral therapy in low- and middle-income countries. Increased efforts are needed to expand access to HIV care and treatment services for children. Also in 2008, only 8% of infants born to pregnant women with HIV initiated co-trimoxazole by two months of age.

1. OVERVIEW

1.1. HIV among women and children

With continuously increasing numbers of women, infants and children living with HIV every year, the HIV epidemic continues to dramatically affect their health, livelihood and survival across regions. The estimated number of women living

with HIV increased from 14.1 million in 2001 to 15.5 million by 2007 (1). In sub-Saharan Africa, women now account for almost 60% of the adults living with HIV, although in other regions women continue to represent less than half of all people living with HIV. About 40% of the people living with HIV in South-East Asia are women and 30% in Latin America

Box 1. Estimating the number of children and pregnant women needing services

Estimating the number of people needing HIV services is related to estimating the number of people living with HIV. Trends in HIV prevalence and the number of people living with HIV by country are estimated regularly through a collaborative process involving country representatives from ministries of health and statistical units, UNAIDS, WHO and partner organizations, based on the latest country data available (5). The estimates were most recently revised in 2009 and included the most recent country-reported data from 2008. The methods and assumptions of the UNAIDS and WHO estimation model continue to evolve and are regularly updated as new data become available. In addition, improved country data on HIV prevalence also contribute to revising and updating the model over time. The latest estimates of need for antiretroviral therapy are slightly lower than previously estimated due to changes in HIV prevalence and other factors (see Box 2). UNAIDS and WHO will publish the results of the new estimates in an AIDS epidemic update report in November 2009.

Estimating the number of women needing antiretrovirals to prevent mother-to-child transmission

The number of women needing antiretrovirals to prevent mother-to-child transmission in any given year is based on the HIV prevalence among pregnant women, which is estimated through the number of women living with HIV, the fertility rate adjusted for age and the reduction in fertility caused by HIV. In addition, it is assumed that 15% of pregnancies do not come to term due to miscarriages and other events; these pregnancies are not included in the estimates of women needing antiretrovirals to prevent mother-to-child transmission of HIV.

Changing estimates for HIV prevalence within a country also changes the estimates of the numbers of women needing antiretrovirals to prevent mother-to-child transmission. WHO/UNICEF/UNAIDS estimated in 2007 that about 1.5 million [1.4 million-1.6 million] pregnant women were living with HIV in low- and middle-income countries and needed antiretrovirals to prevent mother-to-child transmission (6). In 2009, based on new data and parameters, the previous 2007 estimate of the number of pregnant women needing antiretrovirals to prevent mother-to-child transmission has been revised downward to 1.4 million [1.1 million-1.7 million]. The corresponding coverage of antiretrovirals to prevent mother-to-child transmission in 2007 has been recalculated to be 35% [29-44%] instead of 33% [31-35%] as previously published (section 4.2).

Estimating the number of children needing antiretroviral therapy

According to WHO guidelines, all children with HIV younger than one year of age need antiretroviral therapy. After the age of one year, the children needing treatment are defined as the children living with HIV who have moderate to severe disease (7). The number of children needing antiretroviral therapy in a given year is based primarily on the number of infants newly infected with HIV and their survival to the time when they need antiretroviral therapy. The number of infants newly infected with HIV is a function of the HIV prevalence among pregnant women and the estimated rate of mother-to-child transmission according to antiretroviral regimen coverage and infant feeding practices. HIV disease progression and the survival of children with and without co-trimoxazole prophylaxis and antiretroviral therapy are applied to account for deaths among children living with HIV.

Pregnant women living with HIV may receive the following five categories of antiretroviral regimen for preventing mother-to-child transmission of HIV, each of which leads to different mother-to-child transmission probabilities: none; single, dual and triple prophylactic antiretroviral regimens; and antiretroviral therapy. Additional transmission can occur after birth through breastfeeding, and different monthly probabilities of HIV transmission are applied for the following infant feeding practices: exclusive breastfeeding, replacement feeding and mixed feeding.

Guidelines on antiretrovirals to prevent the mother-to-child transmission of HIV and for antiretroviral therapy for children will be reviewed at the end of 2009 in light of new evidence. This may lead to changes in the estimation assumptions and methods. The collection of better data may also allow the model parameters to be better adjusted to reflect the programmatic impact of interventions to prevent mother-to-child transmission on the number of children newly infected with HIV.

and the Caribbean, East Asia and Europe and Central Asia. Globally, the percentage of adult women (15 years and older) among people living with HIV has remained stable at 50% for the past 10 years (1).

HIV is the leading cause of mortality among women of reproductive age worldwide (2). HIV can affect mortality both directly and indirectly; one way HIV comprises the underlying cause of death is by worsening pregnancy outcomes. A study from Zimbabwe found that HIV accounted for 27% of reported maternal deaths in 2006 (3). A five-year audit of maternal mortality at one of the largest public hospitals in Johannesburg, South Africa from 2003 to 2007 documented that maternal deaths were six times higher among women living with HIV than among HIV-negative mothers (4). The combined effect of maternal morbidity and death also has devastating effects on children's health, well-being and survival.

In 2008, an estimated 1.4 million pregnant women living with HIV in low- and middle-income countries gave birth. Sub-Saharan Africa accounted for 91% of all pregnant women living with HIV, of whom about 70% were concentrated in Eastern and Southern Africa and the remaining 30% in Western and Central Africa. East, South and South-East Asia accounted for 6% of the total number of pregnant women living with HIV and other regions for 2% and less.

The number of children younger than 15 years living with HIV also increased from 1.6 million [1.4 million–2.1 million] in 2001 to 2.0 million [1.9 million–2.3 million] in 2007, although the number of newly infected children has been declining since 2003 (1), probably due to the global stabilization of HIV prevalence among women and increasing coverage of programmes to prevent mother-to-child transmission. In 2007, children accounted for 6% of all people living with HIV, 17% of the people newly infected and 14% of all HIV-related mortality worldwide.

More than 90% of the children living with HIV are infected through mother-to-child transmission during pregnancy, around the time of birth or through breastfeeding (1). Other routes of HIV transmission among children include blood transfusion with HIV-contaminated blood, injections with contaminated needles and sexual transmission among children experiencing an early sexual debut.

Overall, 20 countries in sub-Saharan Africa and East, South and South-East Asia account for about 90% of the pregnant women needing antiretrovirals to prevent mother-to-child

Box 2. Estimating antiretroviral therapy need and coverage among adults

Antiretroviral therapy coverage measures the proportion of people needing antiretroviral therapy who have access to it. The numerator (the number of people receiving antiretroviral therapy) is derived from national programme reporting systems, aggregated from health facilities or other service delivery sites. The denominator (the total number of people needing antiretroviral therapy) is generated using a standardized statistical modelling approach. Estimating the number of people who need antiretroviral therapy raises some definition and measurement issues, which in turn influence estimates of coverage.

Based on the recommendations of the UNAIDS Reference Group on Estimates, Modelling and Projections, UNAIDS and WHO have developed modelling methods and tools to generate country estimates of the magnitude of the epidemic and key impact indicators, including mortality. The national HIV estimates are used as a basis to calculate the number of people in need. This includes all people who meet treatment initiation criteria, whether or not these people know their HIV status and their eligibility for antiretroviral therapy.

Treatment needs are estimated using a software package called Spectrum. This takes into consideration the national epidemiological data and some key assumptions that include the adult prevalence over time, the average survival of people living with HIV with and without antiretroviral therapy and the average time between seroconversion and eligibility for antiretroviral therapy. In addition, the number of people receiving treatment is taken into account to generate estimates of treatment need.

Definition of eligibility for antiretroviral therapy

Currently, WHO recommends that adults living with HIV in resource-limited settings should start antiretroviral therapy when the infection has been confirmed and there are signs of clinical advanced disease (HIV disease stage IV, regardless of CD4 cell count; and stage III with CD4 cell count below 350 cells per mm³) or laboratory evidence of severe immunosuppression (CD4 cell count below 200 per mm³ irrespective of disease stage).

transmission. The same countries are also home to over 80% of the children younger than 15 years needing antiretroviral therapy in low- and middle-income countries (Box 1). Given their high levels of HIV burden among women and children, progress in these countries can substantially influence the overall rates of global progress in preventing the mother-to-child transmission of HIV and expanding access to HIV care and treatment for children (Table 1).

Table 1. Twenty low- and middle income countries with the highest estimated numbers of pregnant women living with HIV in need of antiretrovirals to prevent mother-to-child transmission of HIV and numbers of children in need to antiretroviral therapy

Rank by number of pregnant women living with HIV	Country	Estimated number of pregnant women in need of antiretrovirals in 2008 [range]	% of the total in low- and middle-income countries	Estimated number of children in need of antiretroviral therapy in 2008 [range]	% of the total in low- and middle-income countries
1	Nigeria	210 000 [110 000-300 000]	15%	110 000 [57 000-160 000]	15%
2	South Africa	200 000 [120 000-280 000]	14%	94 000 [53 000-130 000]	13%
3	Mozambique	110 000 [50 000-180 000]	8%	45 000 [24 000-67 000]	6%
4	Kenya	110 000 [53 000-160 000]	8%	49 000 [25 000-71 000]	7%
5	United Republic of Tanzania	— [40 000-130 000]	6%	40 000 [20 000-66 000]	5%
6	Uganda	82 000 [44 000-120 000]	6%	42 000 [23 000-60 000]	6%
7	Zambia	70 000 [38 000-96 000]	5%	34 000 [18 000-47 000]	5%
8	Malawi	— [32 000-82 000]	4%	— [17 000-45 000]	4%
9	Zimbabwe	53 000 [29 000-73 000]	4%	37 000 [22 000-50 000]	5%
10	India	49 000 [25 000-80 000]	4%	30 000 [16 000-46 000]	4%
11	Ethiopia	36 000 [18 000-54 000]	3%	23 000 [12 000-33 000]	3%
12	Cameroon	36 000 [19 000-52 000]	3%	18 000 [10 000-26 000]	2%
13	Democratic Republic of the Congo	32 000 [17 000-48 000]	2%	16 000 [9 900-22 000]	2%
14	Côte d'Ivoire	22 000 [11 000-34 000]	2%	14 000 [6 900-21 000]	2%
15	Burundi	16 000 [7 200-24 000]	1%	8 000 [4 400-11 000]	1%
16	Angola	16 000 [8 000-24 000]	1%	7 400 [3 900-12 000]	1%
17	Chad	15 000 [7 700-23 000]	1%	7 300 [3 700-11 000]	1%
18	Lesotho	14 000 [8 600-19 000]	1%	7 300 [4 300-9 700]	1%
19	Ghana	13 000 [6 400-19 000]	1%	5 900 [2 600-9 200]	1%
20	Botswana	12 000 [7 500-16 000]	1%	7 900 [4 900-10 000]	1%

* No point estimate is provided as the estimated number of pregnant women living with HIV in need of antiretrovirals (in the United Republic of Tanzania and Malawi) and the estimated number of children living with HIV in need of antiretroviral therapy (in Malawi) are currently being reviewed and will be adjusted, as appropriate, based on ongoing data collection and analysis.

1.2. Commitments, goals and targets to address HIV among women and children

During the past decade, the international community has continually committed to scale up access to health services and reduce the burden of HIV among women and children. In the Declaration of Commitment on HIV/AIDS adopted at the United Nations General Assembly Special Session on HIV/AIDS in 2001 (8), countries committed to reduce the proportion of infants with HIV by 50% by 2010 by ensuring that 80% of pregnant women and their children have access to essential prevention, treatment and care services to reduce the mother-to-child transmission of HIV. These commitments were re-affirmed by the Group of Eight (G8) countries in 2005 (9) and 2007 (10), the Abuja Call to Action Towards an HIV-free and AIDS-free Generation in 2005 (11) and the Political Declaration of the United Nations General Assembly High-Level Meeting on AIDS to work towards universal access to HIV prevention, treatment, care and support in 2006 (12). These global commitments have been accompanied by regional commitments (Box 3).

Beyond the goal of ensuring an HIV-free and AIDS-free generation, global action to prevent the mother-to-child transmission of HIV directly contributes to achieving the Millennium Development Goals 4, 5 and 6 (Box 4), which

target reducing by two thirds the mortality rate of children younger than five years, reducing by three quarters the maternal mortality ratio and halting and beginning to reverse the spread of HIV/AIDS by 2015.

Several multilateral and bilateral agencies have also prioritized to action to reduce the burden of HIV among women and children. In May 2009, UNAIDS issued a call to action to significantly improve the delivery of services for preventing mother-to-child transmission of HIV as a critical step towards achieving universal access (13). The Global Fund to Fight AIDS, Tuberculosis and Malaria is committed to supporting efforts to prevent the mother-to-child transmission of HIV and to expand HIV care and treatment for children (14). The United States President's Emergency Plan for AIDS Relief has realigned targets of its new multi-year programme (PEPFAR II) to the Declaration of Commitment on HIV/AIDS, aiming to provide services for the prevention of mother-to-child transmission to 80% of all pregnant women and exposed infants and to reduce transmission by 40% in recipient countries (15).

UNITAID has become an important partner in global efforts to accelerate access to HIV treatment by supporting the provision of drugs and diagnostic commodities for preventing the mother-to-child transmission of HIV, HIV treatment and care for children and second-line regimens for treatment

Box 3. Eliminating the vertical transmission of HIV and syphilis in the Caribbean

HIV and syphilis are major public health problems affecting women and their newborn infants in the Caribbean. In 2009, the Caribbean region adopted the Regional Initiative for the Elimination of Mother-to-Child Transmission of HIV and Congenital Syphilis jointly proposed by the WHO Regional Office for the Americas and UNICEF.

The Initiative envisions eliminating the mother-to-child transmission of HIV and syphilis as public health problems in all countries and territories in the Caribbean by 2015. Through an interactive process that involved a wide range of stakeholders, an elimination strategy was developed during 2008-2009. The strategy builds on current global technical and programmatic guidance and proposes an integrated approach focusing on four strategic lines of action:

- enhancing the capacity of maternal, newborn and child health services for the early detection, care and treatment of HIV and syphilis among pregnant women, their partners and infants; strengthening the surveillance of HIV and syphilis in maternal and child health services and health information systems;
- integrating interventions for managing HIV and sexually transmitted infections with services for sexual and reproductive health and other relevant services; and
- strengthening health systems.

With support from WHO and UNICEF, several countries in the Caribbean region are currently developing and starting to implement plans to roll out the initiative at country level. At the regional level, the initiative is coordinated by a technical working group consisting of regional experts and representatives of key partners in the HIV response.

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for adults. Since 2006, UNITAID and the Clinton HIV/AIDS Initiative have catalysed reductions in the prices of leading antiretroviral drugs in low-income countries (16).

At the international level, an Interagency Task Team (IATT) on Prevention of HIV Infection in Pregnant Women, Mothers and their Children brings together international partners that work on preventing mother-to-child-transmission of HIV and providing children with HIV treatment, care and support. The

IATT issues guidance for scaling up interventions to prevent the mother-to-child transmission of HIV and provide HIV treatment and care for children and promotes collaborative and coordinated technical assistance to countries. In 2007, in *Guidance on global scale-up of the prevention of mother-to-child transmission of HIV (17)*, the IATT recommended specific targets and coverage levels of core interventions to guide national programmes as they scale up interventions to address HIV among women and children (Box 5).

Box 4. The Millennium Development Goals

The eight United Nations Millennium Development Goals, agreed upon by United Nations Member States in 2000, commit countries and development partners to achieve the following by 2015:

- 1 eradicate extreme poverty and hunger;
- 2 achieve universal primary education;
- 3 promote gender equality and empower women;
- 4 reduce child mortality;
- 5 improve maternal health;
- 6 combat HIV/AIDS, malaria and other diseases;
- 7 ensure environmental sustainability; and
- 8 develop a global partnership for development.

Each goal includes specific, measurable targets to guide action. Goal 6 calls on countries to have halted by 2015 and begun to reverse the spread of HIV/AIDS and to achieve, by 2010, universal access to treatment for HIV/AIDS for all those who need it. Progress in the response to HIV/AIDS is critical not only to achieve Goal 6 but also to reach Goals 4 and 5, which commit to reducing child and maternal mortality and promoting universal access to reproductive health services. The response to the HIV/AIDS epidemic will also influence the achievement of other goals.

Box 5. Recommended targets and coverage levels for preventing the mother-to-child transmission of HIV and HIV treatment and care for children at the national level

- At least 80% of all pregnant women attending antenatal care are provided with information on preventing the mother-to-child transmission of HIV.
- At least 80% of all pregnant women attending antenatal care are tested for HIV, including those previously confirmed to be living with HIV.
- At least 80% of pregnant women living with HIV receive antiretroviral prophylaxis or antiretroviral therapy to reduce the risk of mother-to-child transmission.
- At least 80% of eligible pregnant women living with HIV receive antiretroviral therapy for their own health.
- At least 80% of pregnant women living with HIV receive infant feeding counselling and support at the first infant follow-up visit.
- At least 80% of women living with HIV are successfully referred and enrolled in comprehensive longitudinal care and treatment.
- At least 80% of infants born to women living with HIV receive a virological HIV test within two months of birth.
- At least 80% of infants and children living with HIV and in need receive co-trimoxazole prophylaxis and/or antiretroviral therapy.

Source: WHO, UNICEF and the Inter-Agency Task Team (IATT) on Prevention of HIV Infection in Pregnant Women, Mothers and their Children Prevention of HIV Infection in Pregnant Women, Mothers and their Children.

1.3. Tracking progress towards international commitments for national scale-up of services to prevent mother-to-child transmission and achieve an HIV-free generation

On behalf of the IATT, UNICEF and WHO established a global reporting mechanism to monitor progress towards achieving goals related to preventing mother-to-child transmission in 2004 and HIV treatment and care for children in 2005 (78). In 2008, UNICEF, WHO and UNAIDS collected data through a joint process to monitor the health sector response to HIV/AIDS towards universal access. More countries are providing data on progress towards targets associated with the United Nations General Assembly Special Session on HIV/AIDS and universal access related to HIV services for women and children, increasing from 108 countries in 2006 to 142 in 2008.

The range of data requested and reported from countries has also increased with the evolution and scaling up of interventions to prevent the mother-to-child transmission of HIV. Some recent additions include data on the categories of antiretroviral regimens provided to pregnant women living with HIV to monitor progress in the implementation of international guidance to provide more efficacious regimens; data on infant testing and co-trimoxazole prophylaxis to monitor progress

in infant follow-up; data on country targets; and information related to programmes and policies.

In 2008, 142 countries, including 123 low- and middle-income countries, reported data on HIV related services among women and children.

This chapter analyzes data and summarizes progress on access and uptake in the 123 (of the total of 149) low- and middle-income countries that reported data. These 123 countries account for 97% of the 124 million women who gave birth in low- and middle-income countries in 2008 and nearly all (99.8%) of the estimated 1.4 million pregnant women living with HIV needing antiretrovirals for preventing mother-to-child transmission in low- and middle-income countries. All these women need effective interventions to prevent mother-to-child transmission of HIV, including antiretroviral therapy or prophylaxis for preventing transmission of the virus to their children.

In 2009, UNAIDS and WHO refined the HIV/AIDS estimation methods to reflect the availability of more reliable data from numerous countries. As a result, new HIV estimates of women and children needing interventions related to preventing mother-to-child transmission have been generated using the refined methods, including for past years, by recalculating

Box 6. Monitoring progress in preventing mother-to-child transmission and data quality

Programmes for preventing mother-to-child transmission are difficult to monitor accurately at the national level for several reasons: 1) they comprise a cascade of multiple interventions; 2) the interventions are often integrated across various service delivery points: for instance, these interventions can be delivered in facilities providing antenatal care, labour and delivery services, child health services or HIV care and treatment services; and 3) mother and child follow-up is often poor and records of interventions and outcomes are not linked, resulting in a lack of information on longitudinal follow-up after the pregnancy period. Further, the key intervention – the provision of antiretrovirals to a pregnant women living with HIV to reduce the risk of transmission to the baby – is recorded at health facilities based on whether the drug was dispensed and whether the drug was actually adhered to is often unknown. This could result in a bias in measuring how the intervention affects HIV transmission from mother to child.

Common data quality issues exist in many countries. Double counting across multiple service delivery points is a common issue with which countries grapple when compiling national statistics related to preventing the mother-to-child transmission of HIV. For example, in settings in which the same pregnant woman living with HIV may receive antiretrovirals at antenatal care, in a maternity ward during labour and delivery or in HIV care sites, there is potential to double-count if data are aggregated across all service delivery points. In addition, many countries face incomplete recording of data in patient registers and inaccurate aggregation, recording and reporting from the facilities to the subnational and the national levels. Some countries were unable to report data on interventions such as the number of pregnant women living with HIV receiving antiretroviral therapy for their own health, since they have not yet established data collection mechanisms to capture this information. Countries are aware of these issues and are making efforts to improve their monitoring systems. This chapter attempts to provide the best available data reflecting the actual situation where possible.

The IATT has developed a guide for monitoring and evaluation, including recommended indicators and issues to consider in improving and strengthening the monitoring of national programmes for preventing mother-to-child transmission. It will be published in late 2009.

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previous estimates based on the new parameters. Global estimates of the number of women and children needing services for preventing the mother-to-child transmission of HIV and the data on the coverage of key interventions reported for 2004, 2005, 2006 and 2007 were thus recalculated using the newly generated estimates (Box 1).

Similarly, to achieve consistency and establish a comparative measurement of progress, trend analyses of progress were recalculated using only the newly generated estimates.¹

1.4. HIV interventions for women and children

The global and country-level response to the mother-to-child-transmission of HIV is based on a comprehensive approach recommended by the United Nations that includes the following four strategic elements, also known as the four prongs (20):

- 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.

As countries scale up their national programmes, ensuring that all four elements of the comprehensive approach are delivered to women and children in need is critical. The core principle of this approach rests on the concept of a continuum of care for women, children and their families – sequential interventions that begin before pregnancy and continue through pregnancy, labour and delivery and subsequently as part of routine or specialized chronic care services for mother, child and family after the child is born.

1.5. Data sources and methods

International commitments to scale up the response to HIV/AIDS must be accompanied by concerted efforts to track achievements and maintain accountability towards these goals among national and international authorities.

¹ For example, estimates have been revised for the number of pregnant women (19) and the number of pregnant women living with HIV needing antiretrovirals for preventing mother-to-child transmission (Box 1), affecting the coverage of pregnant women receiving an HIV test and the coverage of pregnant women living with HIV receiving antiretrovirals for preventing mother-to-child transmission, which were published in previous WHO/UNICEF/UNAIDS reports.

Box 7. Measuring progress towards universal access

“Access” is a broad concept that measures three dimensions of key health sector interventions: availability, coverage, and outcome and impact.

Availability is defined in terms of the reachability (physical access), affordability (economic access) and acceptability (sociocultural access) of services that meet a minimum standard of quality. Making services available, affordable and acceptable is an essential precondition to achieve universal access.

Coverage is defined as the proportion of the people needing an intervention who receive it. Coverage is influenced by the supply or provision of services, and by the demand from those who need services and their health-seeking behaviour.

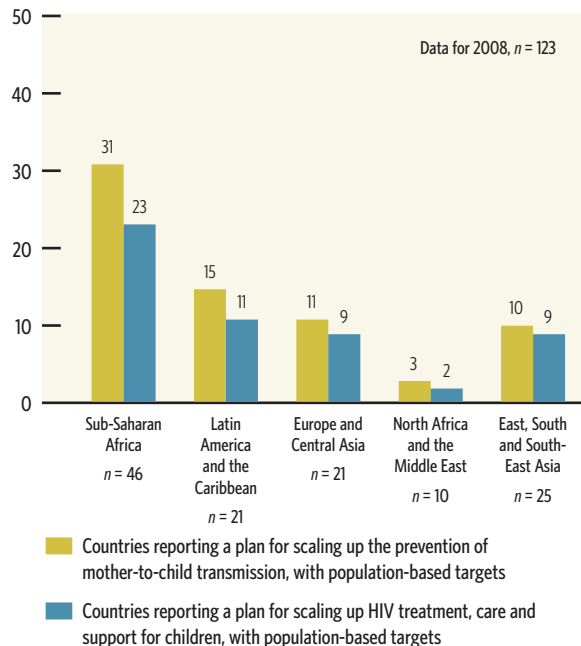
Outcome and impact are defined in terms of medium-term effects, such as behavioural change or higher survival rates, and long-term effects, such as lower infection rates, respectively. Outcome and impact are the result of coverage and depend on the efficiency and effectiveness of interventions.

In recent years, WHO, UNICEF and UNAIDS have collected data from countries regularly to monitor progress towards international targets, including the United Nations General Assembly Special Session Declaration of Commitment on HIV/AIDS, “3 by 5”, scaling up towards universal access and the Millennium Development Goals.

For the first time in 2009, WHO, UNICEF and UNAIDS jointly collected data from national programmes worldwide through a common reporting tool to monitor and report on progress in the health sector response towards universal access (Box 7). The tool includes 46 indicators to track progress towards universal access to HIV prevention, treatment and care in the health sector in the following areas (see list of indicators in the statistical annexes):

- HIV testing and counselling;
- HIV prevention in health care settings;
- preventing sexual transmission of HIV and transmission through injecting drug use;
- managing sexually transmitted infections;
- HIV care and interventions to address HIV/TB coinfection;
- antiretroviral therapy;
- HIV interventions for women and children, including preventing mother-to-child transmission; and
- health systems.

Fig. 1. Number of low- and middle-income countries with national scale-up plans including population-based targets for preventing mother-to-child transmission and for HIV care and treatment for children, by region, 2008



Source: Data reported by countries to WHO, UNICEF and UNAIDS in response to the annual reporting form for monitoring the health sector response to HIV/AIDS, 2009.

The reporting tool also includes questions related to policies and programmes. The indicators are selected in accordance with *Monitoring and reporting on the health sector's response towards universal access to HIV/AIDS treatment, prevention, care and support, 2009–2010: WHO framework for global monitoring and reporting (21)* and the Report Card on Prevention of Mother-To-Child Transmission of HIV and Paediatric HIV Care and Treatment in Low- and Middle income Countries, issued jointly by UNICEF and WHO on behalf of the Expanded Inter-Agency Task Team on Prevention of HIV Infection in Pregnant Women, Mothers and their Children (22). Indicators are aligned with related efforts of partner agencies, such as the Declaration of Commitment on HIV/AIDS of the United Nations General Assembly Special Session on HIV/AIDS (23).

Between January and April 2009, the country offices of WHO, UNICEF and UNAIDS worked with national authorities

to collect a comprehensive set of data on global progress in scaling up the health sector response to HIV/AIDS in 2008. Data were then validated at regional and global levels through a process of collective review and communication with country-level partners, and reconciled at the global level with data collected by other international partners, including other bilateral and multilateral organizations (see explanatory notes to the statistical annexes for further details).

This report also presents data from other sources, including special surveys, population-based surveys (such as the Demographic and Health Surveys (24)) and scientific literature. By bringing together multiple sources of information, the report provides a comprehensive and authoritative annual update on the health sector's achievements towards universal access to HIV prevention, treatment and care in 2008.

In 2008, WHO, UNICEF and UNAIDS received data from 158 countries (among 192 United Nations Member States), including 139 low- and middle-income countries and 19 high-income countries. Response rates varied by indicator and are presented in the corresponding chapters.

1.6. National scale-up plans

National political commitment towards scaling up HIV prevention, treatment and care among women and children has intensified in recent years. An increasing number of countries have moved from donor-supported pilot projects to comprehensive national programmes, supported by the development and implementation of national scale-up plans. In addition, setting targets at population level within national plans by identifying the population groups needing various interventions and determining how many people to reach with interventions helps to develop a realistic and concrete plan to achieve national goals. National scale-up plans with population-based targets agreed on by key stakeholders are therefore critical to define strategies tailored to the local demographic, epidemiological and socioeconomic contexts, strengthen the coordination and mobilization of necessary resources and ensure the expansion of services to reach the majority of women and children in need.

In 2008, 70 of 123 reporting low- and middle-income countries (57%) had established a national plan for scaling up services to prevent the mother-to-child transmission of HIV that included population-based targets. Fifty-four countries (44%) had a national plan for scaling up HIV treatment and care for children with population-based targets. In 2005, only 34

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and 19 countries had scale-up plans with population-based targets for preventing mother-to-child transmission and for HIV services for children, respectively.

Not all countries require such national plans; in particular, countries with extremely low levels of HIV infection may not need to develop national plans with population-based targets. In 2008, sub-Saharan Africa and Latin America and

the Caribbean had a high proportion of countries that reported having plans with targets. About 87% and 67% of countries in sub-Saharan Africa and 86% and 71% of countries in Latin America and the Caribbean had national plans including population-based targets for preventing mother-to-child transmission of HIV and for HIV care and treatment for children, respectively (Fig. 1).

2. PRIMARY PREVENTION OF HIV INFECTION AMONG WOMEN OF CHILDBEARING AGE

Primary prevention of HIV infection among women of childbearing age, including preventing HIV acquisition through sexual transmission or through the use of infected needles, is one of the most cost-effective ways to prevent HIV infections among children (25). In most resource-limited countries, programmes to prevent the mother-to-child transmission of HIV, delivered in the context of maternal, newborn and child health services, represent the main gateway to primary prevention of HIV among women of childbearing age and to HIV prevention, treatment, care and support services (17).

Primary prevention of HIV for pregnant women found to be uninfected when they access programmes to prevent mother-to-child transmission is also important to ensure they remain HIV-negative through pregnancy, childbirth and breastfeeding. In a large study in Rakai, Uganda, women had nearly twice the risk of acquiring HIV while pregnant compared with non-pregnant women, irrespective of their sexual behaviour or their partners' plasma viral load (26). Thus, it remains very important for antenatal programmes for pregnant women and postnatal programmes for breastfeeding women to stress the need for using condoms to protect both mother and baby from HIV infection during the perinatal period and during lactation if breastfeeding.

In the context of preventing the mother-to-child transmission of HIV, primary prevention involves a range of interventions delivered at the health facility and in the community, primarily targeting pregnant women and their male partners and tailored according to the context of the epidemic. Specific interventions include health information and education on HIV and sexually transmitted infections (Fig. 2), HIV testing and counselling, promotion of condom-based dual protection (17) and harm reduction interventions for women who inject drugs. Interventions should be age-appropriate and include access to sex education and sexual and reproductive services such as contraceptive use (27,28).

Although interventions for primary prevention of HIV infection have been defined, levels of HIV knowledge remain low (Fig. 2). Survey data collected between 2007 and 2008 show that, in many countries with recent population-based surveys, less than half of women and men 15–49 years old have comprehensive and correct knowledge of HIV, varying from 5% in Mauritania to 52% in Swaziland among women and from 14% in Bangladesh to 51% in Swaziland among men. Among eight countries with sex-disaggregated data, six show more comprehensive knowledge among men. Moreover,

people 15–24 years old also have little knowledge of HIV. Globally, about 30% of men and 19% of women 15–24 years old in low- and middle-income countries have comprehensive and correct knowledge of HIV/AIDS, far from the target from the United Nations General Assembly Special Session on HIV/AIDS of 95% by 2010 (32).

Active involvement of male partners is critical to address issues related to stigma, discrimination, domestic violence and, more importantly, to support the uptake of available services to prevent mother-to-child transmission. Data show that, in mature, generalized HIV epidemics, a large proportion of new HIV infections occur within HIV-discordant couples (33). The Partners HSV-2 Study, the first large HIV-1 prevention trial in Eastern and Southern Africa involving HIV-1 discordant couples, found that almost half (49%) of couples across all study sites and among all couples with one HIV-1-infected partner were HIV-1 discordant (34). This has direct implications for preventing mother-to-child transmission of HIV due to the high risk of incident infection among pregnant and lactating women and the related high risk of mother-to-child transmission.

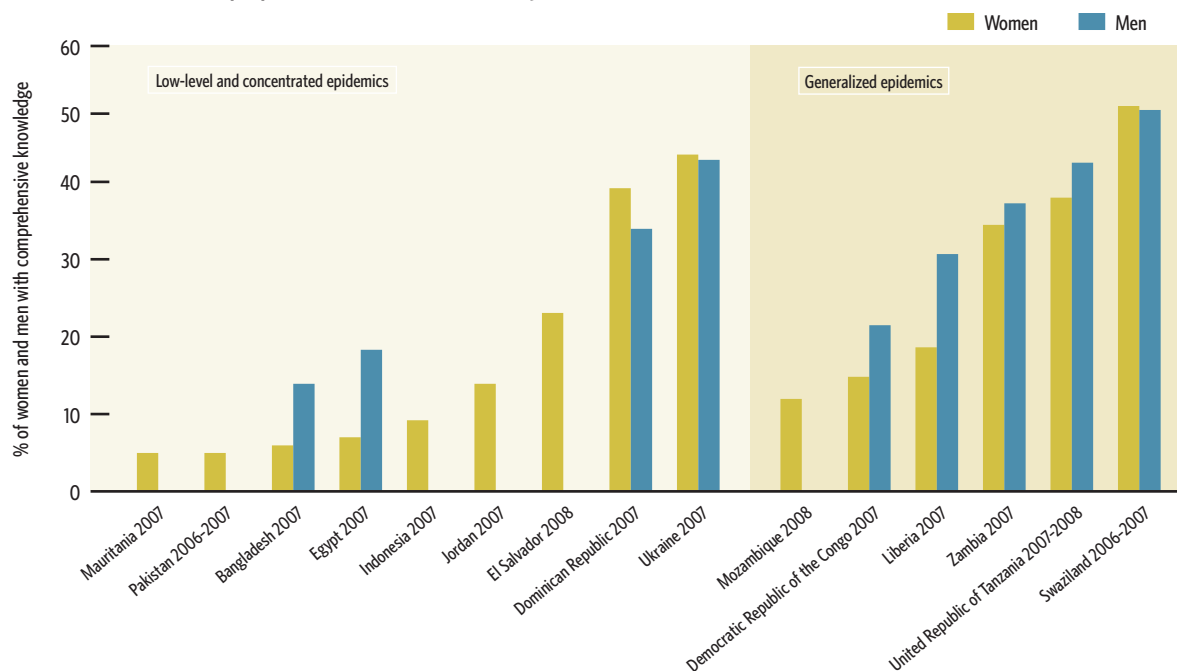
Greater emphasis is thus needed on couple HIV testing and counselling (35). Studies from Burkina Faso, Cambodia, Kenya, Uganda and the United Republic of Tanzania show that providing couple HIV testing and counselling increases acceptance of HIV testing by pregnant women (36–41).

Primary prevention strategies that link interventions targeting pregnant women with those implemented at the population level should also include the promotion of condom use. In selected countries with data from population-based surveys conducted between 2005 and 2007, condom use at the last sexual intercourse was less than 50% among women of all reproductive age groups (Fig. 3). Condom use was highest among those 15–19 years old and declined with increasing age. This finding may be related to the fact that people entering marital or cohabiting relationships are less likely to use condoms. Women's economic, social and cultural position relative to men may also prevent them from effectively negotiating the consistent use of condoms within marriage or long-term stable partnerships.

The promotion and consistent use of condoms within marriages or cohabiting couples, especially in sub-Saharan Africa, also faces other challenges. Condom use is often negatively associated with lack of trust and illicit sex. Such an observation in

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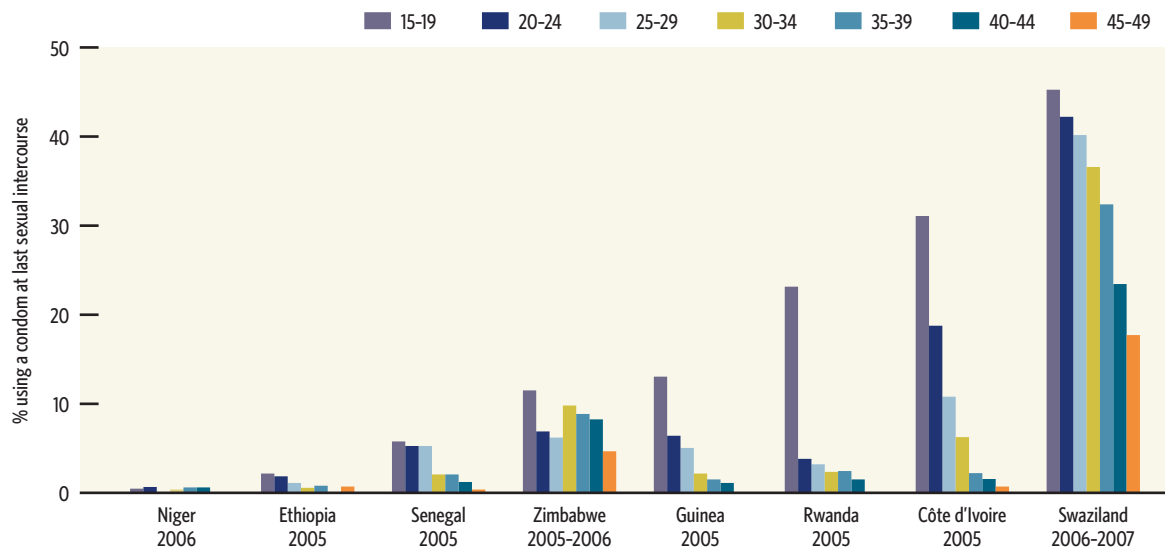
Fig. 2. Percentage of women and men aged 15–49 years with comprehensive knowledge^a of HIV in countries with recent population-based surveys (2007–2008)



^a Comprehensive knowledge is defined as those who correctly identify the two major ways of preventing the sexual transmission of HIV (using condoms and limiting sex to one faithful, uninfected partner), who reject the two most common local misconceptions about HIV transmission, and who know that a healthy-looking person can transmit HIV.

Source: AIS overview [web site] (25); DHS overview [web site] (26); Multiple Indicator Cluster Survey [web site] (27), 2007-2008.

Fig. 3. Reported percentage condom use at last sexual intercourse among women 15–49 years old who had sex in the past year by five-year age groups in selected population-based surveys, 2005–2007



Source: DHS overview [web site] (26), 2005-2007.

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generalized epidemic settings highlights the need for reviewing current strategies, which are primarily based on promoting condoms for married women and men. An encouraging finding related to concurrent partnerships, however, shows that, in most countries with survey data between 2003 and 2007, women with two or more partners in the past year are at least twice as likely as women with only one partner to have used a condom at last sexual intercourse (42).

Scaling up HIV prevention within maternal and child health services is also hampered by several systemic bottlenecks and social factors, including financial fees related to the services

and transport, shortage of skilled health care providers, lack of basic health care commodities at the health facilities and inadequate support from male partners. In many settings, fear of being identified as HIV-positive or fears of rejection and abandonment prevent many women from learning their HIV status, adopting preventive behaviour or accessing health services. The involvement of communities, including male partners, families and communities, is essential to expand women's uptake of prevention services and to address sociocultural barriers related to stigma, discrimination and domestic violence (Box 8).

Box 8. Involving male partners and communities in scaling up HIV services for women and children – examples from sub-Saharan Africa

Community health workers can play an important role in increasing the uptake of interventions to prevent mother-to-child transmission by providing information on access to services, expanding treatment literacy related to the use of antiretrovirals, supporting treatment preparedness and adherence and encouraging positive prevention and disclosure of HIV status. In Kenya, for instance, community health workers successfully provide follow-up services for people receiving antiretroviral therapy (43).

Male partners play an equally important role in the uptake of services to prevent mother-to-child transmission. In Botswana and Zambia, where disclosure of HIV status among pregnant women is relatively high, families and male partners are involved in decisions around antiretroviral therapy (44). In Rwanda (45), treatment sites supported by the United States President's Emergency Plan for AIDS Relief use a tracking system to follow-up women in the community, remind them of scheduled antenatal care appointments, provide them with information, education and communication materials on using antiretrovirals to prevent mother-to-child transmission and provide antiretrovirals to the women in their homes in some communities. Since the intervention, the percentage of women receiving antiretrovirals for preventing mother-to-child transmission increased from about 60% to 90%, and more than 10 sites have been providing this service to 100% of eligible women for many months.

To be successful, programmes to prevent mother-to-child transmission of HIV thus must include strategies to reduce stigma by engaging opinion leaders at the community level, normalize HIV and facilitate access to services by women living with HIV. Programmes must also strengthen the relationship between the formal health system and community organizations to expand HIV prevention services and treatment literacy and preparedness.

3. PREVENTING UNINTENDED PREGNANCIES AMONG WOMEN LIVING WITH HIV

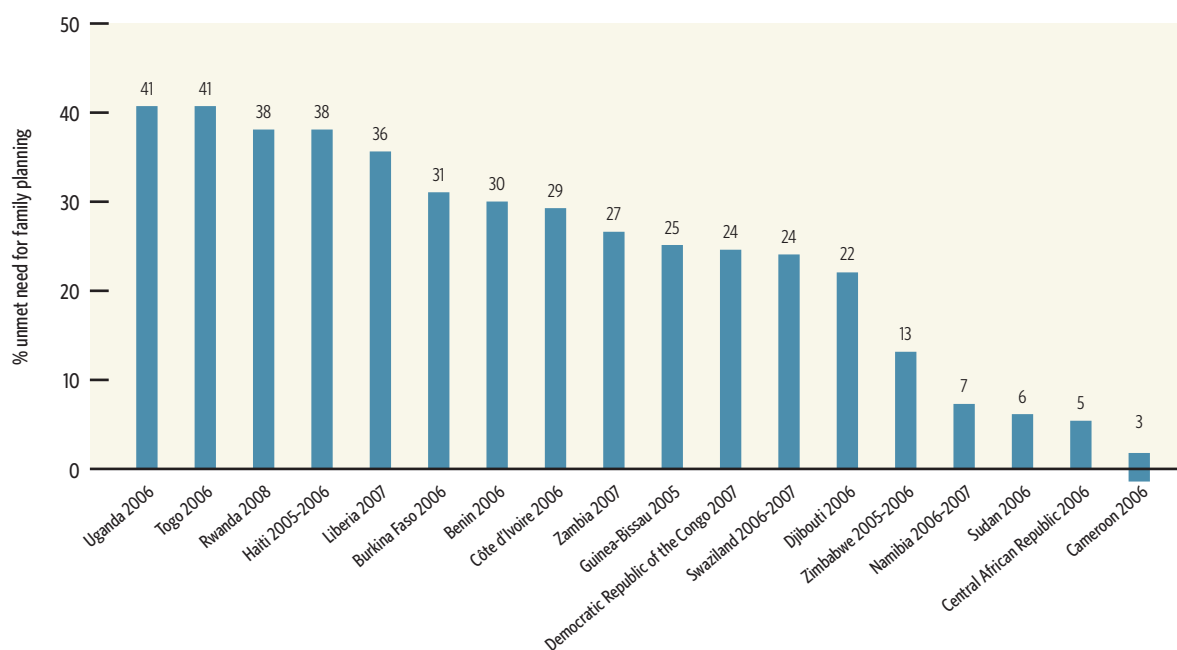
Women living with HIV who know their HIV-positive status especially need sexual and reproductive health services to make informed decisions about their future reproductive life, including when to seek support and services to prevent unintended pregnancies (46). However, there are limited systematic data either from national health information systems or population-based surveys to assess the access and uptake of family planning services among women living with HIV at the population level. The available data mainly document family planning practices among women of reproductive age in general.

Globally, an estimated 80 million (38%) of the 211 million pregnancies each year are unintended (47). Further, data from population-based surveys between 2006 and 2008 in countries with a generalized epidemic show a high unmet need for family planning among married women in several countries (Fig. 4). Half the countries report more than 25% unmet need for family planning, with Togo and Uganda reporting the highest rates at 41%.

Studies from generalized epidemic settings in sub-Saharan Africa suggest that the rates of unintended pregnancy among women living with HIV may be higher than in the general

population. Studies from Côte d'Ivoire, South Africa and Uganda have reported rates of unintended pregnancy that range from 51% to more than 90% in various populations of women living with HIV (49–51). A cross-sectional study among 459 women and men living with HIV in Cape Town, South Africa (52) provided some information on the fertility needs of people living with HIV. The study found that 57% of men and 45% of women reported being open to the possibility of having a child. Among women enrolled in HIV treatment, about 11% of women reported having been pregnant after initiating treatment; all these pregnancies were reported as unintentional, and only half these women had accessed a programme to prevent mother-to-child transmission during the pregnancy. The study also found that one third of women and two thirds of men expressed desire for an opportunity to discuss fertility intentions with a health care provider. Such findings reaffirm the importance of strengthening links between HIV treatment and sexual and reproductive health services and a critical need for better integrating family planning services with services to prevent the mother-to-child transmission of HIV, by expanding family planning services to settings such as antiretroviral therapy clinics and by integrating HIV interventions into family planning services.

Fig. 4. Unmet need for family planning among married women 15–49 years old (%) in countries with a generalized epidemic, 2006–2008



Source: DHS overview [web site] (26); Multiple Indicator Cluster Survey [web site] (27); Sudan Household Health Survey [web site] (44).

4. PREVENTING TRANSMISSION OF HIV FROM WOMEN LIVING WITH HIV TO THEIR INFANTS

Since the first clinical trials demonstrating the efficacy of short-course antiretroviral regimens in preventing the transmission of HIV infection from mothers to their infants in 1998, scientific evidence and programmatic experience around HIV prevention, treatment, care and support for women and children have continued to evolve rapidly, accompanied by a corresponding evolution in international normative guidance. Preventing HIV transmission from a woman living with HIV to her infant requires a set of sequential interventions:

- HIV testing and counselling for pregnant women and their partners;
- clinical and immunological (CD4) assessment to determine the eligibility of mothers for treatment;
- antiretroviral therapy for eligible mothers for their own health or antiretroviral prophylaxis for mothers and antiretroviral prophylaxis for their infants to prevent vertical transmission;
- safer delivery practices; and
- counselling on and support for feeding infants and young children in the context of HIV.

Comprehensive programmes for women and children also include early diagnosis and follow-up of HIV-exposed infants and effective links to care and support for mothers and infants (section 5).

4.1. HIV testing and counselling among pregnant women

HIV testing and counselling for pregnant women in the context of preventing mother-to-child transmission is the main gateway to providing HIV prevention, treatment, care and support services to women and children in resource-limited settings. Access to an HIV test as early as possible during pregnancy enables pregnant women living with HIV to benefit from the necessary interventions to reduce the risk of transmitting HIV to their children. Knowledge of HIV status among HIV-negative pregnant women is equally important to provide them with the necessary information and support to remain uninfected and especially to prevent acquiring HIV infection during pregnancy and breastfeeding, as the risk of mother-to-child transmission is high if seroconversion occurs during these periods.

International guidance (53) recommends that HIV testing and counselling be offered to all women attending antenatal, delivery and postnatal services in generalized HIV epidemics.

In settings with concentrated epidemics and low HIV prevalence, the decision to make provider-initiated HIV testing and counselling a routine component of antenatal, childbirth and postpartum services needs to be based on the local epidemiological and social context and available resources. The recommendation of an HIV test should always be accompanied by providing necessary information and post-test counselling and undertaken with the women's consent.

In settings with high HIV prevalence, the expansion of provider-initiated HIV testing and counselling in health care settings as part of the standard package of antenatal care and delivery services, based on rapid HIV testing with return of results on the same day, has been instrumental in increasing the uptake of HIV testing among pregnant women.

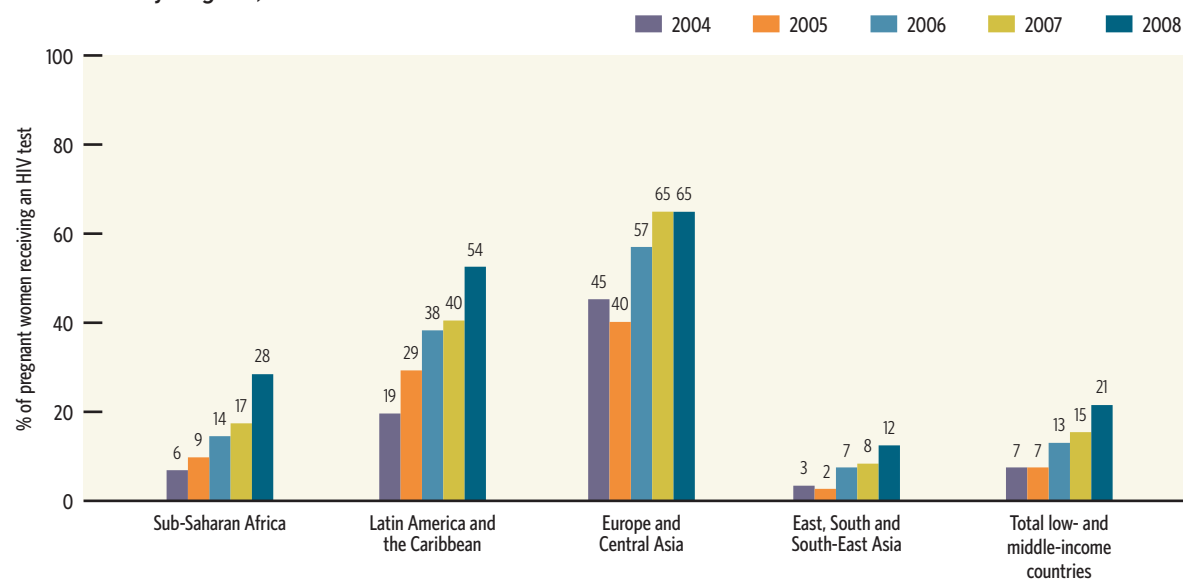
By the end of 2008, 68 of 123 reporting countries (55%) were implementing provider-initiated testing and counselling with informed consent in at least 25% of facilities providing antenatal care. Thirty-seven countries (30%) had implemented the policy in more than 75% of their antenatal care facilities, including 5 of 21 reporting countries (24%) in Latin America and the Caribbean and 25 of 46 reporting countries (54%) in sub-Saharan Africa.

Sixty-four low- and middle-income countries (52%) indicated that they provide rapid HIV testing with the same-day return of results in at least 25% of facilities providing antenatal care in 2008. Thirty-eight countries (31%) had implemented this service in at least 75% of their antenatal facilities, including 25 countries in sub-Saharan Africa.

Further, of the 20 countries with the highest burden of HIV disease among pregnant women, 10 (Botswana, Cameroon, Ethiopia, Kenya, Lesotho, Malawi, Mozambique, Uganda, Zambia and Zimbabwe) had scaled up both provider-initiated testing and counselling and HIV rapid testing to at least 75% of their antenatal care facilities.

The percentage of pregnant women who received an HIV test in low- and middle-income countries increased from 15% in 2007 to 21% in 2008 (Fig. 5.5). In sub-Saharan Africa, the percentage of pregnant women who received an HIV test increased from 17% in 2007 to 28% in 2008. Countries in Eastern and Southern Africa increased substantially from 29% in 2007 to 43% in 2008, and Western and Central Africa increased from 7% to 16% over the same period.

Fig. 5. Percentage of pregnant women who received an HIV test in low- and middle-income countries by region, 2004–2008^a



^a Figures on the coverage of HIV testing among pregnant women were recalculated for previous years based on the revised estimates available.

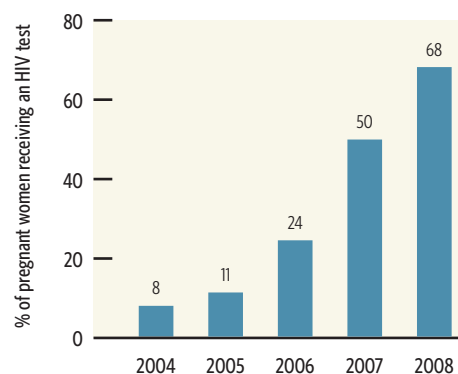
Box 9. Scaling up HIV testing among pregnant women in Malawi

In 2008, Malawi reached 68% (406 000 of 599 000) of pregnant women with HIV testing and counselling during pregnancy or childbirth (Fig. 6). The country has demonstrated consistent expansion of HIV testing during the past five years: 8% in 2004, 11% in 2005, 24% in 2006, 50% in 2007 and 68% in 2008.

Strong political will and strategic leadership have been the underlying drivers of the remarkable progress made in accelerating the scaling up of services to prevent mother-to-child transmission in Malawi. The development of an acceleration plan with clear objectives, targets and strategic approaches and the existence of strong and coordinated partnerships with both development and implementing partners were crucial to leveraging resources and technical assistance for the rapid rolling out of HIV interventions for women and children. Over the past few years, Malawi has received substantial resources through the Global Fund to Fight AIDS, Tuberculosis and Malaria to support the response to HIV.

Innovative approaches to service delivery have also been instrumental in accelerating scale-up. For instance, the annual national HIV testing week has not only helped to increase access to and uptake of HIV testing services but has also helped to alleviate stigma and discrimination, thereby increasing acceptance of HIV testing at routine service delivery points. Malawi has also improved the supply chain management system that has led to consistent availability of essential commodities and strengthened the monitoring and evaluation system with high-quality data collection and reporting.

Fig. 6. Percentage of pregnant women who received an HIV test in Malawi, 2004–2008



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In Latin America and the Caribbean, 54% of pregnant women received an HIV test during their pregnancy in 2008 versus 40% in 2007. Coverage rates are lower in East, South and South-East Asia: from 8% in 2007 to 12% in 2008. Such low coverage rates are probably due to the lack of policies promoting the routine offer of an HIV test to all pregnant women in settings with low-level and concentrated HIV epidemics. In North Africa and the Middle East, less than 1% of pregnant women received an HIV test during pregnancy in 2008.

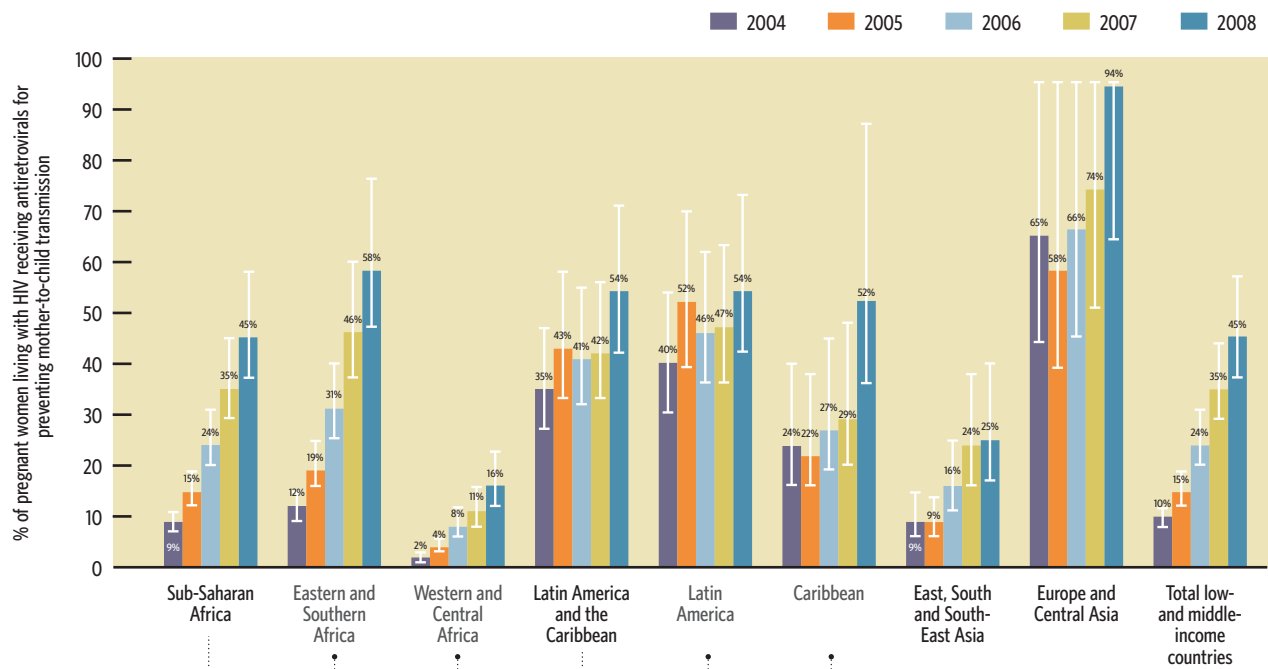
Although the coverage of HIV testing among pregnant women is only 21% in low- and middle-income countries, 6 of the 10 countries estimated to have the largest numbers of pregnant women living with HIV have reached testing coverage of around 60–80% among pregnant women: Kenya, Malawi, Mozambique, South Africa, United Republic of Tanzania and Zambia.

Nineteen low- and middle-income countries reported coverage rates of HIV testing and counselling among pregnant women exceeding 80% in 2008. These include 3 countries from

sub-Saharan Africa (Botswana, Namibia and Sao Tome and Principe), 5 from Latin America and the Caribbean (Argentina, Belize, Costa Rica, Cuba and Guyana), 10 from Europe and Central Asia (Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Lithuania, Republic of Moldova, Russian Federation and Ukraine) and one from East, South and South-East Asia (Thailand).

Testing male partners for HIV in the context of preventing mother-to-child transmission remains a challenge in most low- and middle-income countries. In 2008, 57 countries documented the number of male partners of pregnant women attending antenatal care who received an HIV test. The proportion of pregnant women attending antenatal care whose male partners were tested for HIV was 5% in 2008 versus 2% in 2007 (570 000 male partners tested in these countries in 2008 versus 360 000 partners tested in 2007). Rwanda had a notable achievement: the proportion of pregnant women attending antenatal care whose sexual partners were tested for HIV increased from 65% in 2007 to 77% in 2008.

Fig. 7. Percentage of pregnant women with HIV receiving antiretrovirals for preventing mother-to-child transmission of HIV in low- and middle-income countries by region, 2004–2008



The bar indicates the uncertainty range around the estimate.

Source: Data reported by countries to WHO, UNICEF and UNAIDS in response to the annual reporting form for monitoring the health sector response to HIV/AIDS, 2009.

4.2. Antiretrovirals to prevent mother-to-child transmission, including antiretroviral therapy for eligible mothers

Coverage of antiretrovirals among pregnant women living with HIV

In 2008, 45% [37-57%] of pregnant women living with HIV living in low- and middle-income countries (628 400 of 1.4 million pregnant women with HIV) received antiretroviral drugs to prevent HIV transmission to their infants, including antiretroviral therapy for their own health (Fig. 7). This represents a significant increase in coverage of antiretroviral drugs for the prevention of mother-to-child transmission from 10% [8-12%] in 2004, 15% [12-18%] in 2005, 24% [20-31%] in 2006 and 35% [29-44%] in 2007.

In sub-Saharan Africa, coverage of antiretrovirals for preventing mother-to-child transmission of HIV reached 45% [37-58%] in 2008. Eastern and Southern Africa made substantial progress, with coverage increasing from 46% [37-60%] in 2007 to 58% [47-76%] in 2008. Coverage in Western and Central Africa, which increased from 11% [8-16%] in 2007 to 16% [12-23%] in 2008, was lower than the coverage in Eastern and Southern Africa but largely influenced by the results in two countries, the Democratic Republic of the Congo and Nigeria, which bear the most significant HIV disease burden in the region.

Countries in Europe and Central Asia maintained high coverage levels, with 94% [64% to >95%] of pregnant women living with HIV receiving antiretrovirals. Coverage in Latin America increased from 47% [36-63%] in 2007 to 54% [42-73%] in 2008. Notable progress was observed in the Caribbean, where 52% [36-87%] of pregnant women living with HIV received antiretrovirals versus 29% [20-48%] in 2007. In East, South and South-East Asia, only 25% [17-40%] of pregnant women living with HIV received antiretrovirals for preventing mother-to-child transmission of HIV. Coverage rates were lower in North Africa and the Middle East, where about 1% of pregnant women living with HIV received an antiretroviral regimen for preventing vertical transmission of HIV infection (Table 2).

The coverage of antiretrovirals to prevent mother-to-child transmission varies among the 20 countries that account for the largest number of pregnant women living with HIV, ranging from 5% in Chad and the Democratic Republic of the Congo to more than 95% in Botswana (Fig. 9). All 20 countries, with the exception of the Democratic Republic of the Congo, have

documented progress in the uptake of maternal antiretroviral prophylaxis since 2007, with rapid acceleration in Côte d'Ivoire (from 13% in 2007 to 41% in 2008 (Box 10)) and Lesotho (from 27% in 2007 to 57% in 2008).

Fig. 9 represents the 20 countries estimated to have the largest numbers of women needing antiretrovirals to reduce mother-to-child transmission and the estimated coverage of antiretrovirals for preventing mother-to-child transmission. Twelve of these countries currently reach less than 50% of the pregnant women living with HIV needing antiretrovirals. Of the 20 countries, only Botswana has achieved the United Nations General Assembly Special Session on HIV/AIDS target of 80% antiretroviral coverage for preventing mother-to-child transmission (Fig. 10).

The efficacy of antiretrovirals in preventing the mother-to-child transmission of HIV varies with the type of drug combinations used and the duration of the regimens. Since 2006, an increasing number of countries have shifted away from providing single-dose nevirapine regimens towards the use of more efficacious regimens, with combinations of two or three antiretroviral drugs.

More countries are able to report disaggregated data on the distribution of antiretroviral regimens received by pregnant women living with HIV to prevent mother-to-child transmission (from 59 countries in 2007 to 97 in 2008). However, analysing the global distribution of various antiretroviral regimens is difficult because many countries are still setting up functional national monitoring mechanisms. In one third of the countries, disaggregated data on the antiretroviral regimen received were not available for all women. Thus, although it is encouraging that more countries have established monitoring systems to track the use of more efficacious regimens, these systems are not yet functioning nationally in many countries. As a result, a large proportion of antiretroviral regimens received by women living with HIV remain uncategorized (increasing from 9% in 2007 to 33% in 2008).

In the 97 countries reporting disaggregated data on antiretroviral regimens for 2008, 31% of women receiving antiretrovirals to prevent mother-to-child transmission received a single-dose regimen versus 49% in 2007 (Fig. 11). The percentage receiving a combination prophylactic regimen was 26%, but given the large proportion of regimens received being reported as uncategorized, overall, more countries are probably moving away from single-dose regimens towards more efficacious combination prophylactic regimens and

Table 2. Estimated number of women needing and receiving antiretrovirals for preventing mother-to-child transmission in low- and middle-income countries by region, 2008^a

Geographical region	Number of pregnant women with HIV receiving antiretrovirals for preventing mother-to-child transmission, 2008	Estimated number of pregnant women living with HIV needing antiretrovirals for preventing mother-to-child transmission, 2008 [range]	Estimated percentage of pregnant women living with HIV receiving antiretrovirals for preventing mother-to-child transmission, 2008 [range] ^b	Percentage of the estimated number of HIV-positive pregnant women needing antiretrovirals for preventing mother-to-child transmission
Sub-Saharan Africa	576 800	1 280 000 [990 000-1 600 000]	45% [37-58%]	91%
Eastern and Southern Africa	516 500	900 000 [680 000-1 100 000]	58% [47-76%]	64%
Western and Central Africa	60 300	380 000 [260 000-510 000]	16% [12-23%]	27%
Latin America and the Caribbean	17 100	32 000 [24 000-41 000]	54% [42-71%]	2%
Latin America	13 000	24 000 [18 000-31 000]	54% [42-73%]	2%
Caribbean	4 100	7 900 [4 700-11 000]	52% [36-87%]	1%
East, South and South-East Asia	21 700	85 000 [54 000-130 000]	25% [17-40%]	6%
Europe and Central Asia	12 600	13 400 [8 100-20 000]	94% [64->95%]	1%
North Africa and the Middle East	<200	13 400 [6 800-22 000]	1% [1-2%]	1%
All low- and middle-income countries	628 400	1 400 000 [1 100 000-1 700 000]	45% [37-57%]	100%

Note: some numbers do not add up due to rounding.

^a Annex 3 provides country specific data.

^b The coverage estimate is based on unrounded estimates of pregnant women receiving and needing antiretroviral for preventing mother-to-child transmission.

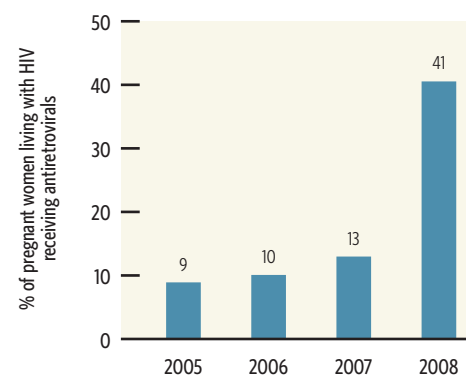
Box 10. Expanding access to antiretrovirals to prevent the mother-to-child transmission of HIV in Côte d'Ivoire

In 2008, Côte d'Ivoire reached 41% (9296 of 22 450) of pregnant women living with HIV with antiretrovirals to prevent the transmission of the virus to their infants, up from 13% in 2007 and less than 10% in 2005 and 2006 (Fig. 8). This is the most significant increase in percentage points among the countries in Western and Central Africa.

This remarkable progress is the result of strong advocacy, policy development, innovative programmatic approaches and sustained technical assistance, including through the IATT. In 2008, the national government opted for decentralization of service delivery with a district-based approach, including the establishment of district operational plans in some regions with support from UNICEF, the Elizabeth Glaser Pediatric AIDS Foundation, International Center for AIDS Care and Treatment Programs and ACONDA Association/ESTHER (Ensemble pour une Solidarité Thérapeutique Hospitalière en Réseau). As a result, the proportion of facilities providing antenatal care services that offer both HIV testing and antiretrovirals for preventing mother-to-child transmission increased from 21% (147 of 716) in 2006 to 44% (356 of 716) in 2008.

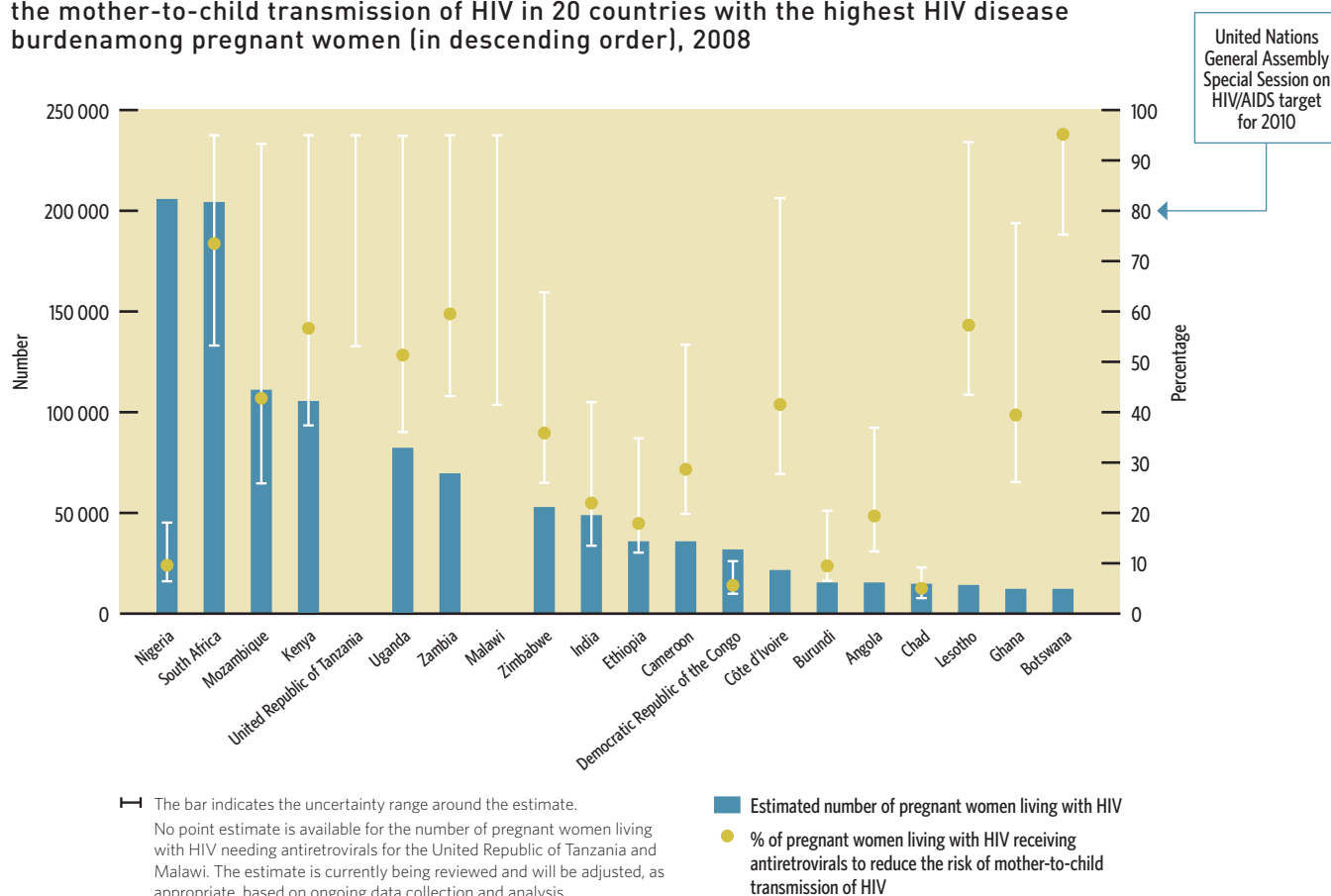
With support from implementing partners, including the United States President's Emergency Plan for AIDS Relief, the national programme has also introduced performance-based financing in selected districts to mobilize resources for decentralized scale-up efforts, motivate health service providers, improve the quality of services and increase their uptake. Peer support groups have been established in each service delivery site to promote community engagement as a component of the scale-up strategy. Some of the factors that have contributed to increasing access to and uptake of maternal antiretrovirals include improved forecasting and supply chain management for antiretroviral drugs and related commodities; harmonization of monitoring and evaluation systems; and coordination of technical assistance from development partners, especially through IATT's joint technical missions.

Fig. 8. Percentage of pregnant women living with HIV who received antiretrovirals to prevent mother-to-child transmission of HIV in Côte d'Ivoire, 2005–2008



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Fig. 9. Percentage of pregnant women living with HIV receiving antiretrovirals to prevent the mother-to-child transmission of HIV in 20 countries with the highest HIV disease burden among pregnant women (in descending order), 2008



Box 11. Normative guidance on antiretroviral regimens to prevent the mother-to-child transmission of HIV

The 2006 WHO guidance (54) recommends clinical and immunological screening of all pregnant women who test positive for HIV. Pregnant women living with HIV found eligible to receive antiretroviral therapy for their own health should receive antiretroviral therapy immediately. Initiating antiretroviral therapy among pregnant women who need it not only improves their own health but also significantly reduces HIV transmission to their infants. Securing the health of the mothers improves children's well-being and survival.

For pregnant women with HIV who do not yet require antiretroviral therapy, the WHO guidelines recommend the use of combination antiretroviral prophylactic regimens to prevent the mother-to-child transmission of HIV. The recommended regimen by WHO is based around zidovudine (from 28 weeks of pregnancy or as soon as possible thereafter) plus single-dose nevirapine and lamivudine during labour and a maternal 7-day tail of zidovudine and lamivudine and a single dose of nevirapine and 1 or 4 weeks of zidovudine for the infant. In settings that do not currently have the capacity to deliver the recommended prophylactic regimen to prevent mother-to-child transmission, implementing the single-dose (mother and infant) nevirapine regimen may be necessary - as an absolute minimum.

Preventing the mother-to-child transmission of HIV is a rapidly evolving field in which new research data and programme experiences are rapidly becoming available. In November 2008, WHO convened an expert consultation to review and analyse new evidence that has become available since the 2006 guidelines regarding the use of antiretroviral drugs for preventing mother-to-child transmission. The consultation recommended revising the guidance to initiate antiretroviral therapy among pregnant women for their own health at an earlier stage (such as for women to be eligible for treatment at a higher CD4 count than currently recommended), revising guidelines on infant antiretroviral prophylaxis and simplifying the current normative guidance to facilitate country-level implementation. WHO will revise the current guidelines at the end of 2009.

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Fig. 10. Coverage of antiretrovirals to prevent the mother-to-child transmission of HIV, 2008

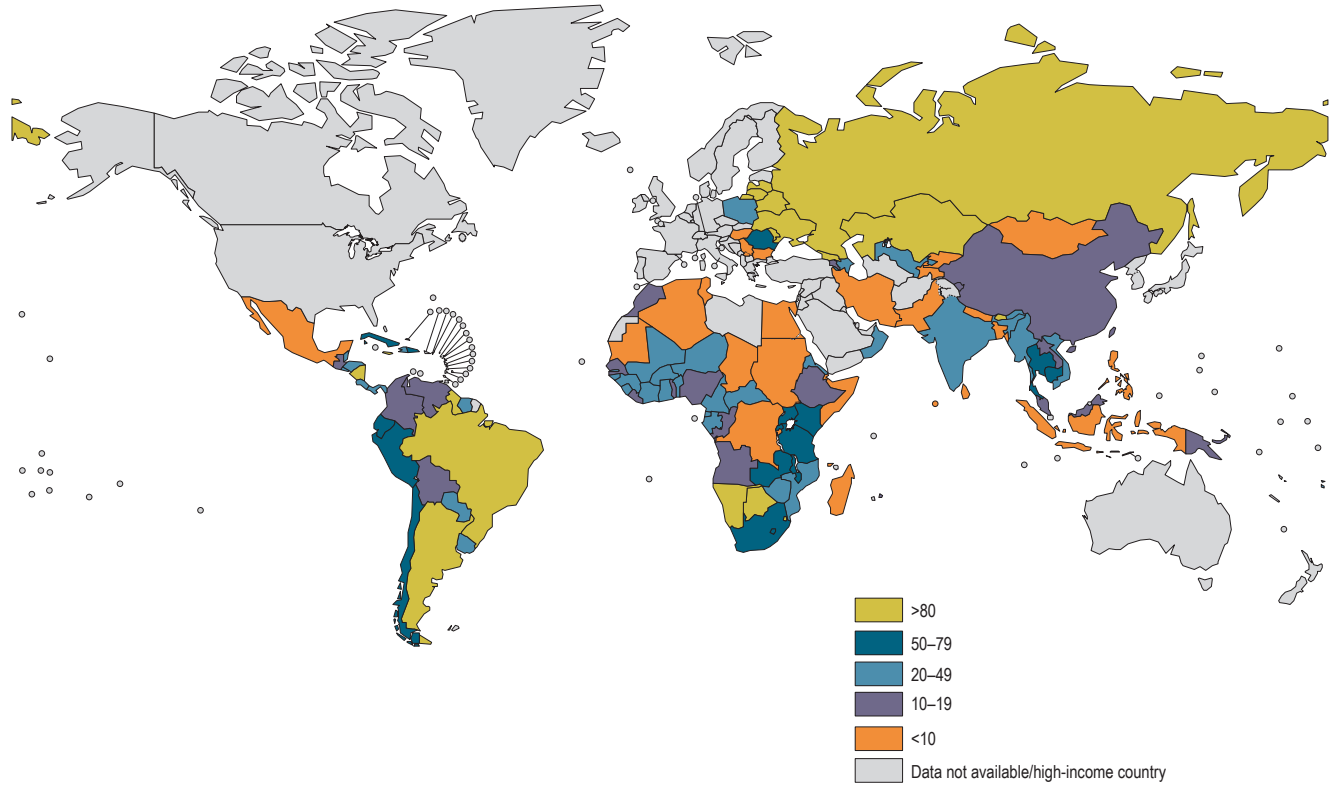
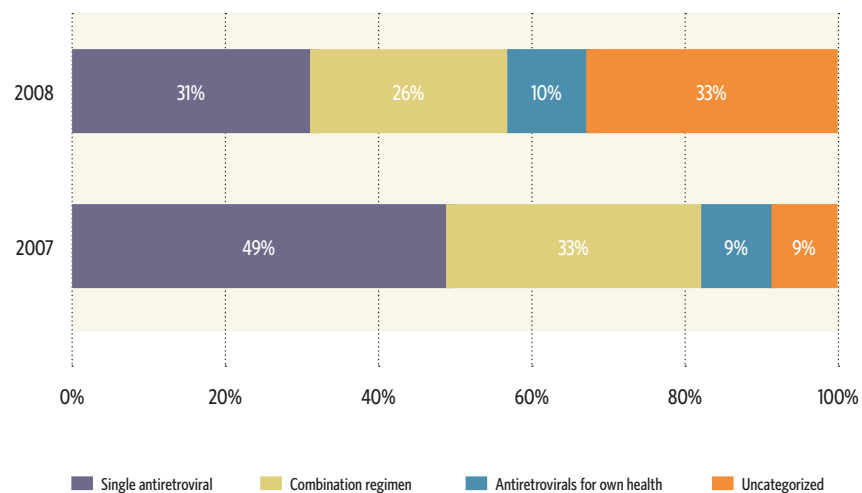


Fig. 11. Percentage distribution of various antiretroviral regimens provided to pregnant women in low- and medium-income countries in 2007 and 2008, based on available data



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providing antiretroviral therapy for pregnant women living with HIV who need it for their own health.

The distribution of regimens varies across regions. In sub-Saharan Africa, at least 30%¹ of women accessing antiretrovirals for preventing mother-to-child transmission received single-dose regimens in 2008 versus 49% in 2007. Countries in Latin America and the Caribbean, Europe and Central Asia and North Africa and the Middle East provided the more efficacious regimen to the large majority of women receiving antiretrovirals to prevent mother-to-child transmission, whereas those in East, South and South-East Asia provided the least efficacious regimen.

Achieving the United Nations General Assembly Special Session on HIV/AIDS target of reaching 80% of pregnant women living with HIV with antiretrovirals to prevent mother-to-child transmission requires that at least 1.1 million of the estimated 1.4 million pregnant women living with HIV have access to this intervention. This defines the overall gap in the global response – at least half a million additional pregnant women living with HIV need to be reached by antiretrovirals in low- and middle-income countries to achieve the target in addition to the 628 400 mothers who had access to this intervention in 2008.

At the end of 2008, the following countries are estimated to have reached the United Nations General Assembly Special Session on HIV/AIDS target for preventing mother-to-child transmission of HIV by ensuring that at least 80% of pregnant women living with HIV were provided with antiretrovirals: Argentina, Belarus, Bhutan, Botswana, Brazil, Georgia, Guyana, Jamaica, Kazakhstan, Latvia, Lithuania, Namibia, Nicaragua, Republic of Moldova, Russian Federation, Swaziland, Thailand and Ukraine.²

The 20 countries with the largest numbers of pregnant women living with HIV in 2008 collectively contribute about 90%

of the global gap in reaching the United Nations General Assembly Special Session on HIV/AIDS target of providing 80% of women with antiretrovirals for preventing the mother-to-child transmission of HIV (Fig. 12). The global gap is the difference between the current number of women who have access to antiretrovirals for preventing mother-to-child transmission and the estimated number who must be reached to achieve the 80% coverage target (United Nations General Assembly Special Session on HIV/AIDS target). Nigeria alone contributes to 30% of this gap. Mozambique, by attaining the 80% threshold, would reduce the global coverage gap by 8%, India by 6% and the Democratic Republic of the Congo, Ethiopia, Kenya, Uganda and Zimbabwe by 5%. Rapid scale-up in these countries is clearly crucial to achieving the goal of HIV-free generations in the future.

Antiretroviral prophylaxis among infants born to mothers living with HIV

The coverage of infant antiretroviral prophylaxis also increased in accordance with the increasing uptake of antiretrovirals by pregnant women living with HIV. In 2008, 32% of an estimated 1.4 million infants born to mothers living with HIV received antiretrovirals for preventing mother-to-child transmission versus 20% in 2007, 18% in 2006, 12% in 2005 and 6% in 2004 (Fig. 14).

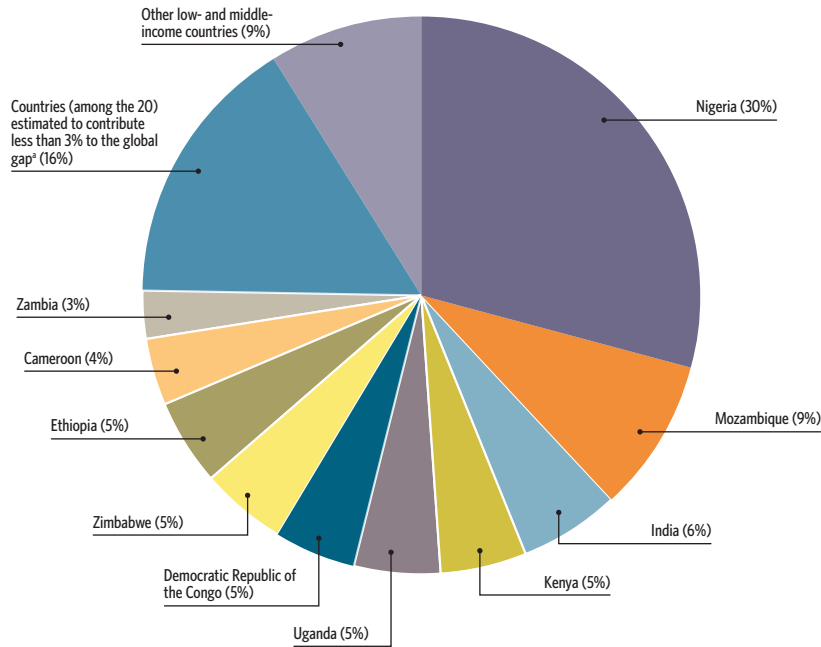
Coverage in Europe and Central Asia is very high: close to 100%. In Latin America and the Caribbean, more than half the children in need (54%) had access to this intervention in 2008, up from 32% in 2007. In sub-Saharan Africa, Eastern and Southern Africa substantially increased coverage from 27% in 2007 to 40% in 2008. Western and Central Africa almost doubled the number of HIV-exposed children who benefited from antiretrovirals for preventing mother-to-child transmission; however, coverage in this subregion remains very low (10%). Coverage was also low in East, South and South-East Asia, reaching only 25% in 2008. Coverage in North Africa and the Middle East was about 1% (Fig. 13).

Despite overall progress, a significant gap remains between the uptake of infant and maternal antiretroviral regimens (430 000 versus 624 000, respectively). Although the gap between the numbers of mothers and infants reached by antiretroviral prophylaxis partly reflects the inadequacy of monitoring and evaluation systems to capture the data on the services provided, bridging the gap will also require strengthening follow-up mechanisms within and outside health care systems.

¹ "At least" 30% because a portion of the uncategorized regimen is a single-dose regimen.

² The listed countries other than Botswana, Namibia and Swaziland have a low level or concentrated epidemic, and greater uncertainty exists for the estimates of the number of women needing antiretrovirals for preventing mother-to-child transmission. In addition, Belarus, Bhutan, Georgia, Guyana, Jamaica, Kazakhstan, Latvia, Lithuania, Nicaragua and the Republic of Moldova have a low estimated number of women needing antiretrovirals to prevent mother-to-child transmission (less than 500), and data for these countries should be interpreted cautiously. Estimates of the number of pregnant women living with HIV needing antiretrovirals for preventing mother-to-child transmission in Brazil are currently being reviewed, but these countries have reached the targets of the United Nations General Assembly Special Session on HIV/AIDS according to preliminary estimates.

Fig. 12. Contribution of the 20 countries with the largest numbers of women needing antiretrovirals for preventing the mother-to-child transmission of HIV to the global gap to reach 80% of those in need, 2008



* These countries include Angola, Botswana, Burundi, Chad, Côte d'Ivoire, Ghana, Lesotho, Malawi, South Africa and the United Republic of Tanzania.

Fig. 13. Coverage of antiretroviral prophylaxis among infants born to mothers living with HIV in low- and middle-income countries by region, 2008

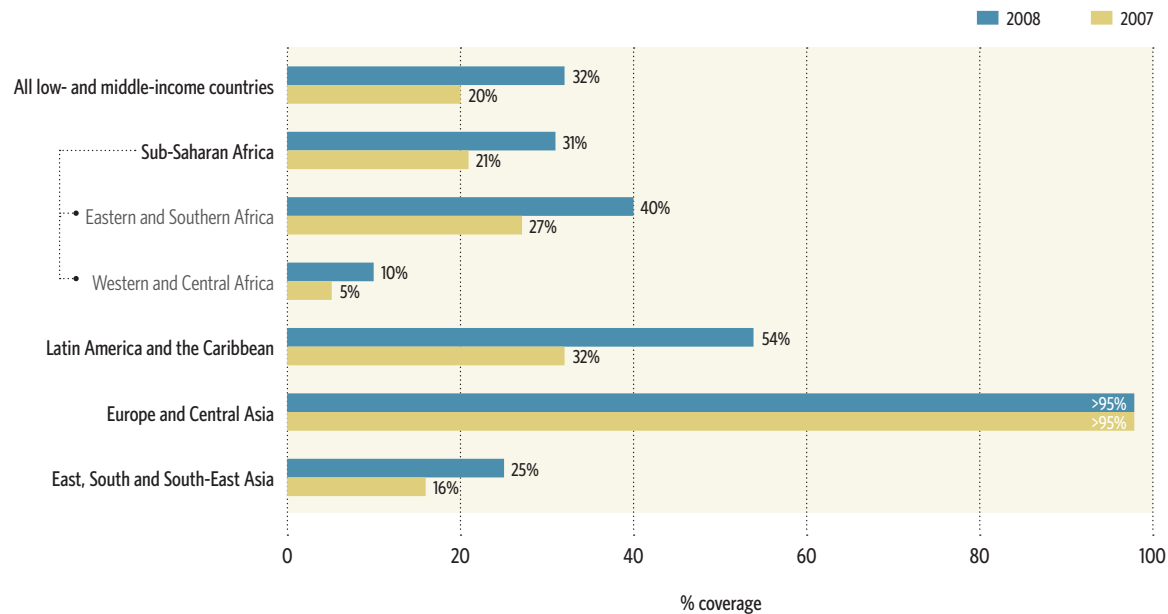
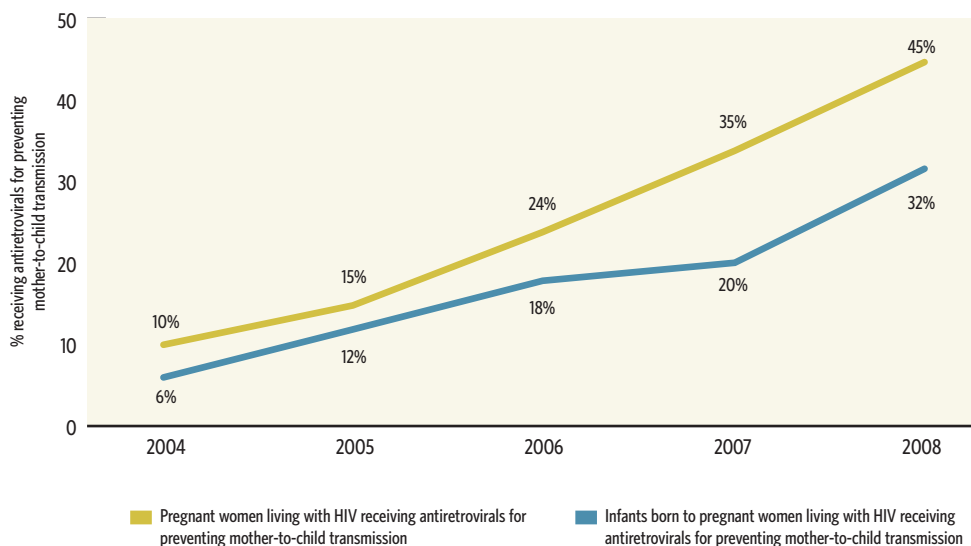


Fig. 14. Percentage of pregnant women living with HIV and infants born to them who received antiretrovirals for preventing mother-to-child transmission, 2004–2008



Assessing the eligibility of pregnant women living with HIV to receive antiretroviral therapy for their own health

When a pregnant woman is identified as living with HIV, her clinical stage of disease and, where available, her CD4 cell count should be assessed to determine whether she is eligible to receive antiretroviral therapy for her own health or to receive only antiretroviral prophylaxis to prevent mother-to-child transmission. WHO recommendations for a public health approach emphasize the benefits of wider availability of CD4 testing to guide decisions about when to initiate antiretroviral therapy. In resource-limited settings, where CD4 cell count is not widely available, the criteria for initiating antiretroviral therapy are primarily based on WHO clinical staging.

In 2008, an estimated 34% of pregnant women who tested positive for HIV were assessed for their eligibility to receive antiretroviral therapy either through clinical staging or CD4 cell count. About 24% were assessed through CD4 cell count, up from 12% reported in 2007. An increasing number of countries are building national capacity, including within maternal and child health services, to expand access to CD4 cell count testing for the majority of pregnant women living with HIV. Countries are also increasingly building systems to collect data on CD4 assessment and track progress.

4.3. Infant feeding within the context of preventing mother-to-child transmission

Breastfeeding by a mother living with HIV is associated with the risk of HIV transmission to her infant for as long as she breastfeeds. However, avoiding breastfeeding places the infant at increased risk of death due to diarrhoea, pneumonia and/or malnutrition. Mothers living with HIV need to balance these competing risks when deciding how to feed their newborn children.

Despite years of experience, services to support mothers living with HIV in making safer infant-feeding decisions remain inadequate in many countries: HIV counselling during antenatal care may be insufficient or infrequent; health workers may not always provide women with information on alternative options according to their individual circumstances (55); support for good infant-feeding practices may be minimal at child health clinics; and HIV testing of HIV-exposed infants at six weeks of age (for the purpose of early infant diagnosis) may be mistakenly used as a time to revise feeding practices. In these circumstances, the practices of feeding HIV-exposed infants generally do not optimize their chances of healthy survival free of HIV infection (Box 12).

Box 12. Latest scientific evidence on HIV and infant feeding

Strong evidence is now available from research studies to suggest that antiretroviral interventions can reduce HIV transmission through breastfeeding. The Mma Bana (58), BAN (59) and Kesho Bora (60) randomized controlled trials reported postnatal transmission rates of 1-3% when mothers living with HIV with CD4 counts greater than 200 per mm³ were given three antiretroviral drugs during the course of breastfeeding. These studies are still to report whether the same mothers developed resistance after they stopped receiving antiretrovirals and whether this had any adverse effects on them if they needed to start antiretroviral therapy for their own health.

The BAN (59), Malawi PEPI (61) and SWEN (62) studies assessed the impact of giving nevirapine daily to the infants of mothers living with HIV who were breastfeeding. When infants received nevirapine daily for up to 6 months of breastfeeding, postnatal transmission rates were only 1.8%. Once the nevirapine was stopped, transmission occurred again, highlighting the need to address the full period of breastfeeding and not just the first months. Other studies are examining the extended use of nevirapine and other drugs as alternatives to nevirapine.

Research is providing clearer directions to improve feeding practices for HIV-exposed infants. Every effort is needed to identify and initiate lifelong antiretroviral therapy among women living with HIV who meet eligibility criteria. For infants of mothers who are not eligible to receive antiretroviral therapy, emerging evidence suggests that the use of antiretrovirals by mothers during the period of breastfeeding or giving an antiretroviral drug to the infant as prophylaxis while breastfeeding can reduce transmission, thereby making breastfeeding a safer option for mothers living with HIV. These interventions, combined with knowledge about the benefits of exclusive breastfeeding, offer an important opportunity to improve the HIV-free survival of future generations of HIV-exposed infants. At the end of 2009, WHO will review guidelines on HIV and infant feeding in the light of new evidence.

The rates of exclusive breastfeeding among infants younger than six months of age continue to increase worldwide, especially in sub-Saharan Africa (up from 24% to 32% between 1996 and 2006) (56). Population-based surveys collect information on infant-feeding practices, but not many surveys provide disaggregated data by maternal HIV status. A recent analysis of 12 population-based surveys between 2003 and 2006 in sub-Saharan Africa showed that 31% of women living with HIV and 38% of HIV-negative women exclusively breastfed their infants up to six months of age (57).

Few national health information systems routinely capture the feeding practices of mothers living with HIV and their infants.

In 2008, very few countries reported information on infant-feeding practices among women living with HIV.

4.4. Assessing the impact of programmes to prevent mother-to-child transmission

An increasing number of countries are able to track national progress in the number of women accessing various services related to preventing the mother-to-child transmission of HIV. However, the actual measured impact of scaled-up programmes and service delivery, including on HIV infections averted and on maternal and child survival, is not well documented in many low- and middle-income countries except from specific settings or research sites. Most routine data collected on preventing mother-to-child transmission provide information about the processes that deliver these interventions rather than their effect.

Assessing how many infants of pregnant women living with HIV ever become infected is difficult for at least two reasons. First, not all pregnant women living with HIV are identified during antenatal care (or women become infected during pregnancy or postpartum breastfeeding), and the infants of these women are therefore not usually tested after birth. Second, in many settings, even when mothers do know their status and have even received an antiretroviral intervention to prevent HIV transmission to their child, relatively few bring their children for testing at follow-up clinics, and tests for infants are not always available.

The programmatic effects of interventions aimed at preventing mother-to-child transmission in sub-Saharan Africa have seldom been systematically evaluated. The PEARL study (Box 13), funded by the United States Centers for Disease Control and Prevention and the Elizabeth Glaser Pediatric AIDS Foundation and implemented in Cameroon, Côte d'Ivoire, South Africa and Zambia, aims to evaluate the effectiveness of country programmes for preventing mother-to-child transmission by combining cord blood surveillance for traces of antiretrovirals from live deliveries, facility surveys, community-based surveys and a cost-effectiveness evaluation (63). Another study in KwaZulu-Natal, South Africa has assessed the effects of programmes through a surveillance approach, testing all children coming to immunization clinics at six weeks of age. Both studies demonstrate that the effects of programmes for preventing mother-to-child transmission can be measured and provides a powerful tool to evaluate programme effectiveness (Box 13).

Box 13. Assessing the effects of interventions to prevent the mother-to-child transmission of HIV

The PEARL study – cord blood surveillance to measure the actual uptake of antiretrovirals for preventing the mother-to-child transmission of HIV

One element of the PEARL study tested cord blood samples from live births for traces of antiretrovirals and collected information on the mother's age, number of previous births, acceptance of HIV testing, whether results were received and documentation of receipt of antiretrovirals for the mother and infant.

The study defined coverage of antiretrovirals for preventing mother-to-child transmission as the proportion of mother-infant pairs with confirmed nevirapine ingestion. Maternal ingestion was confirmed by the presence of nevirapine in the cord blood, and infant ingestion was confirmed by reviewing relevant documentation.

Between April 2007 and October 2008, 28 060 cord blood specimens were collected across 43 randomly identified centres (in Cameroon, Côte d'Ivoire, South Africa and Zambia) of which 12%, or 3250, were HIV-positive. Of these, 2996 had complete data available on file. Cumulatively, coverage as defined by the study was only 50% with confirmed mother and infant nevirapine ingestion. The reasons for non-coverage were multiple. Sixteen per cent of women not covered were not offered an HIV test. A further 6% declined it. Thirteen per cent did not receive their HIV-positive test result, and 7% did not receive nevirapine for preventing mother-to-child transmission. In 27% of the cases, the mother did not adhere to the treatment prescribed, and 14% of infants were not dosed. Higher coverage was positively associated with the age of the mother and with the number of antenatal care visits. Failed maternal adherence (the absence of cord blood nevirapine in women documented to have received nevirapine) was more likely among women who were prescribed zidovudine and single-dose nevirapine than among women who received only nevirapine.

The study demonstrates that programmes for preventing mother-to-child transmission must pay greater attention to each step of the standard cascade of interventions, from HIV testing to actual drug delivery and adherence. Bottlenecks must be carefully monitored and identified so that corrective actions can be implemented to maximize the likelihood that services to prevent mother-to-child transmission can reach those in need and can ultimately avert new HIV infections.

Encouraging data from KwaZulu-Natal, South Africa on the effects of interventions to prevent the mother-to-child transmission of HIV

In 2008–2009, in the Province of KwaZulu-Natal, South Africa, the effects of services for preventing mother-to-child transmission were assessed using a simple but robust approach. All mothers bringing their infants for routine six-week immunization were asked for permission for the surveillance team to take a dried blood sample from their infant. All mothers were approached irrespective of whether they had tested HIV-positive or HIV-negative in the last pregnancy or whether they indicated having received an intervention for preventing mother-to-child transmission. Mothers were asked to disclose their HIV status, whether they had received any antiretrovirals and other sociodemographic information. The sample was first tested for HIV antibodies using an ELISA test. Antibodies detected in the infant at this age are maternal antibodies and therefore indicate maternal prevalence and HIV exposure status of the infant. If antibodies were detected, then an HIV viral test was conducted on the same sample, which would indicate infant HIV status. Thus with one sample, maternal HIV prevalence, infant HIV prevalence and mother-to-child infant vertical transmission rates were determined.

In the course of 11 months, 374 clinics in 6 districts were each visited for about 6–8 weeks by one of several dedicated project teams. Dried blood spots were collected from 20–25 infants at each site.

97% of women agreed to provide information about past pregnancies (about 38 000 women); 89% of the mothers of six-week-old infants consented to blood spots being collected from their infants to perform HIV tests (n = 8013).

■ Proportion of mothers who had ever tested for HIV.....	98.5%
■ Proportion of mothers who tested for HIV in the last pregnancy.....	89.2%
■ Mothers who self-reported being HIV-positive.....	40.2%
■ Among mothers who reported enrolling in the programme for preventing mother-to-child transmission (n = 3212):	
% receiving single-dose nevirapine only.....	9%
% receiving zidovudine and single-dose nevirapine.....	74%
% receiving antiretroviral therapy.....	13%
% receiving nothing.....	3%
■ Proportion of infants with antibodies present (= maternal HIV prevalence).....	40.4%
■ Proportion of all infants - HIV DNA positive (= infant HIV prevalence).....	2.8%
■ Proportion of HIV-exposed infants - HIV DNA positive (= vertical transmission rate) - all.....	7.0%

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A similar surveillance exercise was previously performed in 2004-2005 but with a smaller sample (n = 2437) at a time when only single-dose nevirapine was available. The six-week vertical transmission rate was 21% versus 7% in 2008-2009. The dramatic reduction in transmission can be attributed to three factors: the vast majority of women had tested during pregnancy and knew their HIV status; about 13% of women living with HIV were receiving antiretroviral therapy; just three months after zidovudine was introduced to the clinical protocol in South Africa, antenatal care services had switched from single-dose nevirapine to the more efficacious regimen such that 74% of pregnant women living with HIV reported having received the two drugs.

These data demonstrate that effective antiretroviral interventions can be delivered at scale and that transmission rates can be reduced dramatically. Although they only reflect success at one point in time and do not include later transmissions due to breastfeeding, they are a major encouragement and show what can be achieved if adequate commitment, leadership, training and supervision come together within district health systems. KwaZulu-Natal is a good example of impact assessment providing very timely and positive feedback to services for preventing mother-to-child transmission.

Source: Personal communication with Sandile Buthelezi, Chief Director HIV/AIDS, KwaZulu-Natal Department of Health, Pietermaritzburg, South Africa and Christiane Horwood, Deputy Director, Centre for Rural Health, Nelson R. Mandela School of Medicine, University of KwaZulu-Natal, Durban, South Africa.

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5. TREATMENT, CARE AND SUPPORT FOR CHILDREN LIVING WITH HIV

5.1. Infant diagnosis

HIV infection follows a more aggressive course among infants and children than among adults. One third of children living with HIV die before the age of one year and almost 50% by the second year. WHO recommends that antiretroviral therapy be initiated in all infants diagnosed with HIV in their first year of life (7).

HIV testing is required to reliably identify HIV infection among infants and children and initiate care and treatment interventions in a timely manner. Standard HIV antibody testing (either rapid or laboratory based) identifies the antibodies produced in response to HIV infection. However, among HIV-exposed infants, maternal HIV antibodies are passively transferred to the infant during pregnancy and may persist during the first year of life (and exceptionally beyond), creating difficulty in interpreting positive HIV antibody test results in infants during this time. HIV infection in the first year of life is therefore most reliably diagnosed by virological tests, by detecting the presence of components of the HIV virus itself, usually nucleic acid (HIV DNA or HIV RNA) or viral antigens.

All HIV-exposed infants should receive early virological testing at or around 4–6 weeks of age. Infants with a positive virological

test result should be assumed to be HIV-positive and started on antiretroviral therapy immediately; and HIV infection should be confirmed by repeat viral testing. Virological testing can be reliably performed on site with adequate laboratory capacity or through specimens collected onto filter paper (dried blood spots) and sent to laboratories with capacity for testing. 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. However, the operationalization of diagnostic protocols is often challenged by lack of technical competencies, underdeveloped laboratory capacity and weak systems for transporting blood specimens and results.

Countries have made significant progress in expanding access to HIV testing services at the point of care. In 2008, 83 of 123 reporting countries (67%) reported that they provide HIV testing services, on site, through the use of dried blood spots or by referral to laboratory services. This represents an increase of 46% from 57 countries that reported in 2007.

However, globally, the uptake of HIV testing among children remains low. In 41 countries reporting data on the number of children accessing this intervention in 2008, only 15% of children born to mothers living with HIV in 2008 were tested within the first two months of life. In 21 countries reporting data in 2007 and 2008, representing 13% of the total number of pregnant women needing antiretrovirals in low- and middle-income countries, the number of infants tested within two months of birth increased by 30% from 24 300 in 2007 to 31 700 in 2008. In many countries, reporting systems may not be able to accurately capture this information at the national level.

Early testing of HIV-exposed infants must be given priority within the global and national-level scaling up of programmes to prevent mother-to-child transmission. Much can be learned from the successful interventions implemented by a number of countries in Eastern and Southern Africa with substantially higher coverage of early infant diagnosis, such as Swaziland (30%) and Zambia (27%). An important strategy these countries use to improve the follow-up of known HIV-exposed infants is including HIV-specific information on child health cards to better enable health care workers to identify infants needing HIV testing and innovative approaches such as using mobile phones to connect with mothers living with HIV and their infants.

Box 14. Review of recommendations on diagnosing HIV infection in infants and children

WHO convened a meeting in November 2008 to review recommendations for the diagnostic testing of HIV infection in infants and children and proposed updated recommendations (64). Critical issues identified in developing the recommendations were:

- identifying HIV-exposed infants as early as possible including through HIV testing at birth and/or in routine maternal and child health clinics in high-burden settings;
- confirming initially positive HIV test results to avoid giving unnecessary antiretroviral therapy;
- reaffirming the value of early (at or around six weeks of age) HIV testing for infants known to be exposed to HIV;
- ensuring that breastfeeding is not stopped to perform HIV tests; and
- ensuring that positive HIV test results are fast-tracked to the mother-baby pair so that antiretroviral therapy can be started as early as possible.

Box 15. Scaling up early infant diagnosis in Namibia

Namibia's HIV prevalence rate among women using antenatal care services is 18%. An estimated 14 000 new infections occur annually (65), one third of which are among women 15–24 years old and 9% among children younger than 15 years. In 2005, Namibia decided to introduce early infant diagnosis of HIV infection, piloting the service at Katutura State Hospital in Windhoek. The intervention was subsequently rolled out nationally from January 2006. As of March 2009, a network of 202 sites collected and submitted dried blood spot samples for analysis at the central HIV viral testing laboratory in Windhoek, where HIV testing is centralized.

According to Namibia's national early infant diagnosis policy, HIV DNA testing is available for all HIV-exposed and symptomatic children from as early as six weeks of age. The test is also repeated two months after weaning if the initial result was negative and the infant was breastfed. An initially positive HIV DNA test result is confirmed through a rapid or enzyme-linked immunosorbent assay (ELISA) test once the infant reaches 18 months.

As of March 2009, more than 25 000 HIV tests had been performed since the intervention was introduced. About 75% of all HIV tests are first-time tests. Between 1 April 2008 and 31 March 2009, of a projected 9600 HIV-exposed babies, 7877 had an HIV test, although not all were conducted in the first two months of life.

About 13% of tests were positive in 2006, and the percentage has steadily declined ever since. In 2008, the rate of positive diagnosis reached 9%, a decrease of almost one third. Preliminary results for 2009 show a continued decline in positive results.

The average age of testing has also gradually declined. In 2006, infants tested were 28 weeks old on average, a figure that had been cut to 17 weeks by 2008. This is a promising trend, as more infants are being tested at a younger age, allowing them to access life-saving antiretroviral therapy earlier, with significant positive effects on survival (Fig. 15). However, the age of diagnosis still needs to be decreased further to maximize survival for infants living with HIV.

Rapid and widespread scale-up of early infant diagnosis in Namibia has contributed to high coverage of treatment for infants needing antiretroviral therapy: 7622 children were receiving antiretroviral therapy as of March 2009, representing more than 95% coverage. The downward trend in the rate of positive diagnosis since services for early infant diagnosis were rolled out is also encouraging and, with the introduction of combination antiretroviral prophylaxis for preventing mother-to-child transmission and continued scale-up of HIV services for women and children, as well as the decline in antenatal HIV seroprevalence, the number of HIV DNA samples testing positive is expected to decline further.

Fig. 15. Average age of infants at their first HIV DNA test in Namibia in weeks



Source: Ministry of Health and Social Services, Namibia

Where HIV testing is unavailable, infants still need to be closely monitored, and clinical algorithms and HIV antibody and CD4 tests are needed to identify children living with HIV as early as possible.

5.2. Co-trimoxazole prophylaxis in HIV-exposed infants

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 exposed to HIV. Data

from randomized clinical trials and observational studies demonstrate the effectiveness of co-trimoxazole in preventing pneumocystis pneumonia (*Pneumocystis jiroveci* pneumonia) and other infections among infants living with HIV (66).

In 2006, WHO released guidance on the use of cotrimoxazole preventive therapy for children, adolescents and adults (67) recommending that all HIV-exposed children born to mothers living with HIV start co-trimoxazole preventive treatment at 4–6 weeks after birth and continue until HIV infection has been excluded and the infant is no longer at risk of acquiring HIV through breastfeeding. The development and implementation of national policies and recommendations specific to the use

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of co-trimoxazole prophylaxis for infants and children exposed to or living with HIV, consistent with WHO recommendations, has started to improve the coverage and uptake of this important intervention.

In 2008, 8% of infants born to pregnant women with HIV are reported to have initiated co-trimoxazole prophylaxis by two months of age. This is more than double what was reported in 2007, when only 4% of the infants started cotrimoxazole at the same age. In Eastern and Southern Africa, the subregion most affected by HIV, coverage increased from 5% in 2007 to 9% in 2008 but remains low.

Overall, the data may underestimate the coverage of co-trimoxazole prophylaxis in low- and middle-income countries, as only 67 countries reported data on this indicator in 2008. In 31 countries reporting data in 2007 and 2008, representing 26% of the total number of pregnant women with HIV, the number of infants initiating co-trimoxazole within the first two months of life increased from 52 100 in 2007 to 80 500

in 2008 (by 55%), and coverage increased from 14% to 22%. Despite this increase, however, greater programme efforts need to be directed to scaling up this critical intervention in the years ahead, as coverage levels are still well below the target of 80% coverage.

A major reason for the limited uptake of essential interventions such as early infant diagnosis of HIV infection and co-trimoxazole prophylaxis is the weakness and lack of integration of postnatal follow-up systems in maternal, newborn and child health settings. Although many women are identified as living with HIV during pregnancy and receive critical HIV interventions, many of their infants remain unidentified in the postnatal period, thereby missing out on critical interventions such as co-trimoxazole prophylaxis. Some countries have attempted to address this weakness by incorporating HIV-related information on child health cards to prompt health care workers to identify children exposed to HIV so that they can receive these services in a timely manner.

Table 3. Estimated number of children younger than 15 years receiving antiretroviral therapy, children needing antiretroviral therapy and percentage coverage in low- and middle-income countries according to region, December 2008^a

Geographical region	Reported number of children (0-14 years) receiving antiretroviral therapy, December 2008	Estimated number of children needing antiretroviral therapy, 2008 [range] ^a	Antiretroviral therapy coverage among children, December 2008 [range] ^b	Percentage of total need
Sub-Saharan Africa	224 900	640 000 [500 000-770 000]	35% [29-45%]	88%
Eastern and Southern Africa	195 100	440 000 [340 000-540 000]	44% [36-57%]	61%
Western and Central Africa	29 800	200 000 [140 000-260 000]	15% [11-22%]	27%
Latin America and the Caribbean	16 100	21 000 [18 000-25 000]	76% [65-91%]	3%
Latin America	13 700	17 000 [14 000-20 000]	82% [70->95%]	2%
Caribbean	2 500	4 600 [3 400-5 800]	55% [43-72%]	1%
East, South and South-East Asia	30 000	58 000 [41 000-78 000]	52% [38-73%]	8%
Europe and Central Asia	4 200	4 900 [2 700-7 500]	85% [56->95%]	1%
North Africa and the Middle East	400	6 700 [3 400-11 000]	6% [4-12%]	1%
Total	275 700	730 000 [580 000-880 000]	38% [31-47%]	100%

Note: some numbers do not add up due to rounding.

^a For an explanation of the methods used, see the explanatory notes to Annex 1.

^b The coverage estimate is based on the estimated unrounded number of children receiving and needing antiretroviral therapy.

5.3. Antiretroviral therapy for children

Many HIV-related deaths among children could be avoided through early diagnosis of HIV and timely provision of effective care and treatment. International guidance recommends that, if HIV infection is detected in infancy, immediate antiretroviral therapy is crucial; however, currently most children entering treatment programmes are older.

Countries across all geographical regions have expanded both facility and population-based coverage of antiretroviral therapy for children during the past three years. HIV treatment and care for children is increasingly integrated into existing antiretroviral therapy sites for adult care and into maternal, newborn and child health services. A total of 10 300 facilities were reported to be providing antiretroviral therapy to children in 2008 versus 5660 facilities in 2007, an increase of 82%.

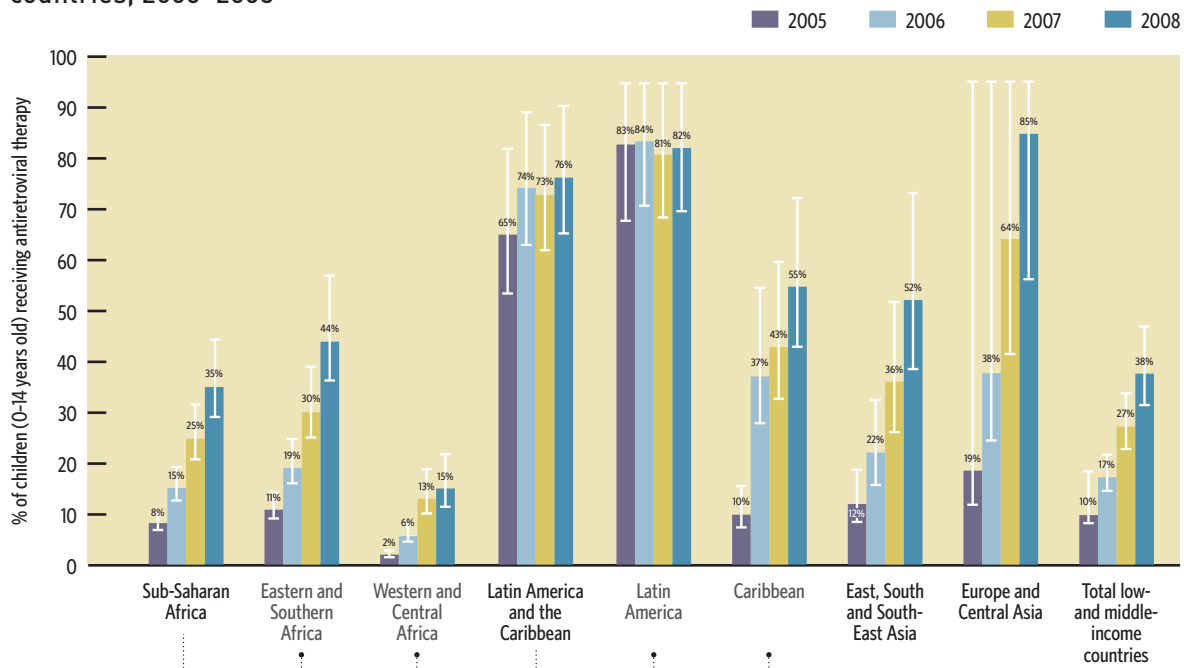
As of December 2008, about 275 700 children younger than 15 years were receiving antiretroviral therapy in low- and middle-income countries, up from 198 000 in 2007, 127 300

in 2006 and 75 000 in 2005 (Table 3, Fig. 16). These children represent an estimated 38% of all children younger than 15 years estimated to need antiretroviral therapy worldwide. Overall, the number of children receiving antiretroviral therapy in low- and middle-income countries increased by 39% between 2007 and 2008 and by more than 3.5-fold between 2005 and 2008.

Regional coverage of antiretroviral therapy for children varies from 6% [4-12%] in North Africa and the Middle East to 85% [56% to >95%] in Europe and Central Asia (Table 3). All regions saw notable progress in the number of children younger than 15 years receiving treatment in 2008 versus 2007, except for Latin America, where coverage was already as high as 82% [70% to >95%].

Eastern and Southern Africa achieved particularly substantial progress: 224 900 children received antiretroviral therapy in 2008, representing coverage of 44% [36-57%] versus 132 500 (30% [25-39%]) in 2007. Progress in Western and Central Africa was much more limited, increasing from

Fig. 16. Percentage of children receiving antiretroviral therapy in low- and middle-income countries, 2005–2008



The bar indicates the uncertainty range around the estimate.

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25 500 children receiving antiretroviral therapy in 2007 (13% [10-19%]) to 29 800 (15% [11-22%]) in 2008. In East, South and South-East Asia, 30 000 children were receiving treatment in 2008 (52% [38-73%]) versus 20 800 in 2007 (36% [26-52%]).

Factors contributing to the expanded uptake of antiretroviral therapy for children include sustained global advocacy, enhanced national commitment, increased availability of antiretroviral products and reduced prices of drug formulations for children.

However, although substantial progress has been made towards achieving universal access to antiretroviral therapy

for children, two thirds of children living with HIV who need antiretroviral therapy globally are still not receiving treatment. In addition, the number of infants and children newly placed on antiretroviral therapy is still not keeping pace with the numbers of infants newly infected as a result of failure to prevent new infections. Additional investment in material and programmatic support, including greater uptake of services for early infant diagnosis of HIV infection, is needed to further increase the initiation of antiretroviral therapy for children living with HIV. Countries also need to begin preparing more intensively for the increasing number of children who need to receive second-line antiretroviral regimens and the associated programmatic challenges.

6. PROVIDING A CONTINUUM OF CARE FOR WOMEN AND CHILDREN

To be effective, evidence-based preventive, treatment and care interventions for pregnant women living with HIV, mothers and their children must be provided within a continuum of care. However the data suggest that several critical gaps continued along this continuum at the end of 2008.

- The proportion of pregnant women attending antenatal care services for at least one visit is high (77%) (32), but the coverage (21%) of HIV testing and counselling among pregnant women is relatively lower.
- The low number of pregnant women identified with HIV who are assessed for their eligibility to receive antiretroviral therapy for their own health (34%) is higher than those who actually receive antiretroviral therapy for their need.
- The third critical gap lies in providing antiretrovirals to prevent mother-to-child transmission to mother-baby

pairs. Only 32% of infants born to mothers living with HIV in 2008 received antiretrovirals versus 45% of mothers who received antiretrovirals for preventing mother-to-child transmission.

- Finally, the data show a significant gap between the number of children born to mothers living with HIV who received antiretroviral prophylaxis (32%) and those that continued into the critical services for early infant diagnosis (15%) and co-trimoxazole prophylaxis (8%).

To maximize the effectiveness of programmes for preventing mother-to-child transmission of HIV, integrated packages of services must be systematically targeted at the facility level, and systems should be developed to track and improve performance at every step of the cascade through follow-up mechanisms and links to the essential treatment, care and support services.

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8. STATISTICAL ANNEXES

Annex 1. Preventing mother-to-child transmission of HIV and children receiving antiretroviral therapy in low- and middle-income countries, 2008

Low- and middle-income countries ^a	Number of pregnant women living with HIV who received antiretrovirals for preventing mother-to-child transmission	Period	Estimated number of pregnant women living with HIV needing antiretrovirals for preventing mother-to-child transmission based on UNAIDS/WHO methods ^b			Estimated percentage of pregnant women living with HIV who received antiretrovirals for preventing mother-to-child transmission ^c			Pregnant women tested for HIV		Infants born to women living with HIV receiving antiretrovirals for preventing mother-to-child transmission	
			Estimate	Low estimate	High estimate	Estimate	Low estimate	High estimate	Reported number	Estimated coverage	Reported number	Estimated coverage
Afghanistan	...	Jan 08-Dec 08	...			...			...		...
Albania	...		...			...			...		...
Algeria	18	Jan 08-Dec 08	<500	<200	1 600	...	1%	9%	...		...
Angola	2 962	Jan 08-Oct 08	16 000	8 000	24 000	19%	12%	37%	162 598	21%	1 682	11%
Argentina	2 463	Jan 08-Dec 08	1 100	<1 000	1 800	...	>95%	>95%	598 123	87%	2 280	>95%
Armenia	6	Jan 08-Dec 08	<100	<100	<100	...	9%	40%	40 067	85%	5	14%
Azerbaijan	17	Jan 08-Dec 08	<100	<100	<100	...	25%	>95%	172 153	>95%	14	37%
Bangladesh	6 ^s	Jan 08-Dec 08	<100	<100	<200	...	5%	15%	62 ^s	<1%	4	5%
Belarus	153	Jan 08-Dec 08	... ^h			...			126 527	>95%	159	
Belize	65	Jan 08-Dec 08	<200	<100	<500	...	20%	68%	6 558	88%	63	32%
Benin	1 447	Jan 08-Dec 08	3 600	1 700	5 500	40%	26%	86%	127 763	37%	1 314	36%
Bhutan	19	Jan 08-Dec 08	<100	<100	<100	...	86%	>95%	2 244 ^t	15%	13	>95%
Bolivia (Plurinational State of)	35 ^m	Jan 08-Dec 08	<500	<200	<1 000	...	6%	21%	42 726	16%	28 ⁱ	8%
Bosnia and Herzegovina	1	Jan 08-Dec 08	...			...			1 198 ^g	3%	...	
Botswana	11 971	Jan 08-Dec 08	12 000	7 500	16 000	>95%	75%	>95%	41 311	87%	10 308	83%
Brazil	6 844	Jan 08-Dec 08	... ^h			...			2 381 280	77%	7 511	
Bulgaria	1	Jan 07-Dec 07	<100	<100	<100	...	3%	9%	...		...
Burkina Faso	1 333	Jan 08-Dec 08	6 700	3 400	10 000	20%	13%	39%	161 455	22%	1 294 ⁿ	19%
Burundi	1 488	Aug 07-Sep 08	16 000	7 200	24 000	9%	6%	21%	28 179	10%	1 299	8%
Cambodia	777	Jan 08-Dec 08	1 400	<1 000	2 200	...	35%	>95%	103 768	29%	768	54%
Cameroon	10 144	Jan 08-Dec 08	36 000	19 000	52 000	28%	20%	53%	276 177	39%	8 315	23%
Cape Verde	57	Jan 08-Dec 08	...			...			7 345	61%	54	
Central African Republic	1 936	Jan 08-Dec 08	8 300	4 400	12 000	23%	16%	44%	22 073	14%	1 167	14%
Chad	722	Jan 08-Dec 08	15 000	7 700	23 000	5%	3%	9%	10 967	2%	454	3%
Chile	203	Jan 08-Dec 08	<500	<200	<1 000	...	32%	>95%	126 097	50%	...	
China	980 ^p	Jan 08-Dec 08	... ^h			...			1 824 624 ^p	10%	1 105	
Colombia	404	Jan 08-Dec 08	3 200	1 700	5 100	...	8%	24%	316 179	34%	472	15%
Comoros	0	Jan 08-Dec 08	<100	<100	<100	...	0%	0%	1 199	6%	0	0%
Congo	438	Jan 08-Dec 08	4 300	2 200	6 300	10%	7%	20%	23 530	19%	360	8%
Cook Islands	...		...			...			...		...
Costa Rica	21	Jan 06-Dec 06	<100	<100	<200	...	13%	50%	61 000 ^k	81%	40 ^f	43%
Côte d'Ivoire	9 296	Jan 08-Dec 08	22 000	11 000	34 000	41%	28%	83%	230 159	32%	4 743	4%
Croatia	2	Jan 07-Dec 07	...			...			...		...
Cuba	41	Jan 07-Dec 07	<100	<100	<200	...	34%	>95%	112 434 ^j	>95%	41 ^l	55%
Democratic People's Republic of Korea	...		<100	<100	<100	...			...		...
Democratic Republic of the Congo	1 776	Jan 08-Dec 08	32 000	17 000	48 000	5%	4%	10%	236 919	8%	1 790	6%
Djibouti	43	Jan 08-Dec 08	<1 000	<500	1 100	6%	4%	13%	8 118	34%	36	5%
Dominica	1	Jan 07-Dec 07			1 224 ^k		2 ^t	

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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		Reported number of children receiving antiretroviral therapy	Period	Estimated number of children needing antiretroviral therapy based on UNAIDS/WHO methods, 2008 ^b			Estimated antiretroviral therapy coverage among children, December 2008 ^c		
Reported number	Estimated coverage	Reported number	Estimated coverage			Estimate	Low estimate	High estimate	Estimate	Low estimate	High estimate
...		...		0	Dec 08	...			...
...		...		12	Dec 08	...			...
...		...		61	Dec 08	...	<100	<1 000	...	11%	79%
...		...		702	Oct 08 ^f	7 400	3 900	12 000	9%	6%	18%
2 160	>95%	...		2 000	Dec 08	...	<500	<500	...	>95%	>95%
4	11%	0	0%	4	Dec 08	...	<100	<100	...	27%	67%
13	34%	15	39%	0	Dec 08	...	<100	<100	...	0%	0%
4	5%	...		6	Dec 08	...	<100	<100	...	13%	35%
170		114 ^k		85	Dec 08	...			...
9 ^g	5%	66	33%	64	Dec 08	...	<100	<200	...	57%	80%
1 314	36%	...		650	Dec 08 ^h	1 500	<1 000	2 400	44%	27%	94%
7	70%	...		1	Dec 08	...	<100	<100	...	13%	50%
27	8%	23	7%	38	Dec 08	...	<100	<500	...	14%	41%
...		...		1	Dec 08	...			...
7 485	60%	...		7 091	Dec 08 ^h	7 900	4 900	10 000	90%	70%	>95%
...		2 306		6 418	Dec 08	...			...
...		...		3	Dec 08	...	<100	<100	...	19%	50%
462	7%	84	1%	1 028	Dec 08	4 100	2 100	6 100	25%	17%	48%
1 046	7%	...		1 300	Dec 08 ^h	8 000	4 400	11 000	16%	12%	30%
203 ⁱ	14%	43 ⁱ	3%	3 067	Dec 08	...	1 800	2 400	...	>95%	>95%
8 315 ^o	23%	1 543	4%	2 090	Sep 08 ^l	18 000	10 000	26 000	11%	8%	20%
54		54		29	Dec 08	...			...
741	9%	124	1%	462	Dec 08 ^h	4 700	2 400	6 700	10%	7%	19%
63 ^s	0%	...		480	Dec 08 ^e	7 300	3 700	11 000	7%	4%	13%
...		141	36%	186	Dec 08 ^h	...	<200	<500	...	70%	>95%
650 ^k		...		1 120	Dec 08	...			...
...		...		3	Dec 07 ^{e,f}	...	<1 000	2 600	...	<1%	<1%
0	0%	0	0%	1	Dec 08	...	<100	<100	...	20%	>95%
...		...		488	Dec 08 ^h	2 300	1 100	3 500	21%	14%	44%
...		...		0	Dec 08	...			...
40 ^k	43%	40 ^k	43%	52	Dec 06 ^j	...	<100	<100	...	53%	>95%
...		...		2 821	Dec 08	14 000	6 900	21 000	20%	13%	41%
...		...		4	Dec 08	...			...
1 ^l	1%	41 ^l	55%	19	Dec 08	...	<100	<100	...	37%	>95%
...		...		...		...	<100	<100	...		
83 ^s	0%	...		4 053	Dec 08	16 000	9 900	22 000	25%	18%	41%
93	13%	...		24	Dec 08	<500	<200	<1 000	7%	4%	13%
2 ^k		...		2	Dec 07		

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Low- and middle-income countries ^a	Number of pregnant women living with HIV who received antiretrovirals for preventing mother-to-child transmission	Period	Estimated number of pregnant women living with HIV needing antiretrovirals for preventing mother-to-child transmission based on UNAIDS/WHO methods ^b			Estimated percentage of pregnant women living with HIV who received antiretrovirals for preventing mother-to-child transmission ^c			Pregnant women tested for HIV		Infants born to women living with HIV receiving antiretrovirals for preventing mother-to-child transmission	
			Estimate	Low estimate	High estimate	Estimate	Low estimate	High estimate	Reported number	Estimated coverage	Reported number	Estimated coverage
Dominican Republic	1 034	Jan 08-Dec 08	1 900	<1 000	2 800	...	37%	>95%	114 001	51%	1 172	63%
Ecuador	277	Jan 08-Dec 08	<1 000	<500	1 200	...	24%	81%	222 564	79%	274	39%
Egypt	3	Jan 08-Dec 08	<500	<100	<500	...	1%	3%	1 750 ^d	<1%	2 ^e	...
El Salvador	189	Jan 08-Dec 08	<1 000	<500	<1 000	...	23%	69%	87 186	70%	155	29%
Equatorial Guinea	567	Jan 08-Dec 08	1 400	<1 000	2 300	40%	25%	76%	6 470	26%	...	...
Eritrea	424	Jan 08-Dec 08	1 500	<1 000	2 600	29%	16%	59%	46 544	26%	424	29%
Ethiopia	6 354	Jan 08-Dec 08	36 000	18 000	54 000	18%	12%	35%	292 238	9%	3 974	11%
Fiji	3 ^f	Jan 08-Dec 08	<100	<100	<100	...	17%	75%	9 041 ^g	51%	1	13%
Gabon	634	Jan 08-Dec 08	1 800	<1 000	2 900	35%	22%	70%	16 340	41%	282	15%
Gambia	321	Jan 08-Dec 08	1 000	<1 000	1 800	...	18%	64%	26 434	43%	232	22%
Georgia	25	Jan 08-Dec 08	<100	<100	<100	...	78%	>95%	58 769	>95%	19	>95%
Ghana	4 991	Jan 08-Dec 08	13 000	6 400	19 000	39%	26%	78%	257 466	34%	2 450	19%
Grenada	7	Jan 07-Dec 07	...	...	...	...	...	...	...	...	...	...
Guatemala	321	Jan 08-Dec 08	2 300	1 100	3 600	...	9%	29%	102 957	23%	159	7%
Guinea	1 205	Jan 08-Dec 08	5 400	2 700	8 200	22%	15%	45%	38 586	10%	326	6%
Guinea-Bissau	305	Jan 08-Dec 08	1 600	<1 000	2 500	20%	12%	39%	8 235	13%	143	9%
Guyana	211	Jan 08-Dec 08	<200	<100	<500	...	85%	>95%	14 337	>95%	222	>95%
Haiti	2 500 ^h	Jan 08-Dec 08	5 500	2 700	8 500	46%	29%	92%	143 878	53%	1 752 ⁱ	32%
Honduras	300	Jan 08-Dec 08	<1 000	<500	1 100	...	27%	94%	108 509	54%	125	18%
Hungary	1	Jan 07-Dec 07	<100	<100	<100	...	2%	8%	8 357	8%	...	...
India	10 673	Jan 08-Dec 08	49 000	25 000	80 000	...	13%	42%	4 234 401	16%	10 577	22%
Indonesia	165	Jan 08-Dec 08	2 300	1 100	3 800	...	4%	15%	5 335	<1%	165	7%
Iran (Islamic Republic of)	52	Sep 07-Aug 08	<1 000	<500	1 500	...	3%	10%	158 ^j	<1%	24	2%
Iraq	0	Jan 08-Dec 08	...	...	...	...	...	...	1 550	<1%	0	...
Jamaica	515	Jan 08-Dec 08	<500	<200	<1 000	...	70%	>95%	28 659	55%	605	>95%
Jordan	2	Jan 08-Dec 08	...	...	...	...	...	...	1	0%	1	...
Kazakhstan	174	Jan 08-Dec 08	<200	<100	<200	...	>95%	>95%	359 158	>95%	181	>95%
Kenya	59 601	Jan 08-Dec 08	110 000	53 000	160 000	56%	37%	>95%	973 244	65%	41 253	39%
Kiribati	0	Jan 08-Dec 08	...	...	...	...	...	...	423	...	...	...
Kyrgyzstan	15	Jan 08-Dec 08	<200	<100	<500	...	5%	19%	125 233	>95%	16	9%
Lao People's Democratic Republic	21	Jan 08-Dec 08	<200	<100	<500	...	8%	28%	1 171 ^k	1%	18	11%
Latvia	37	Jan 07-Dec 07	<100	<100	<100	...	56%	>95%	14 152	61%	...	...
Lebanon	...	Jan 08-Dec 08	<100	<100	<100	...	...	...	...	...	1	3%
Lesotho	8 056	Jan 08-Dec 08	14 000	8 600	19 000	57%	43%	94%	29 430	50%	6 861	49%
Liberia	381	Jan 08-Dec 08	2 700	1 300	4 100	14%	9%	29%	24 423	17%	235	9%
Libyan Arab Jamahiriya	...	...	...	...	...	...	...	...	...	...	...	...
Lithuania	11	Jan 08-Dec 08	<100	<100	<100	...	>95%	>95%	28 614	91%	11	>95%
Madagascar	18	Jan 08-Dec 08	<1 000	0	2 000	...	1%	...	201 833	29%	11	1%
Malawi	33 838 ^l	Jan 08-Dec 08	...	32 000	82 000	...	41%	>95%	405 694	68%	20 058	34%
Malaysia	189	Jan 08-Dec 08	1 100	<500	1 900	...	10%	39%	410 332	75%	185	17%
Maldives	0	Jan 08-Dec 08	<100	<100	<100	...	0%	0%	3 267	57%	0	0%
Mali	1 115	Jan 08-Dec 08	4 300	2 100	6 700	...	17%	54%	67 090	12%	766	18%
Marshall Islands	...	...	...	...	...	...	...	...	...	...	...	...
Mauritania	45	Jan 08-Dec 08	<500	<200	<1 000	...	5%	29%	6 371	6%	15	3%
Mauritius	19	Jan 07-Dec 07	<200	<100	<500	...	8%	37%
Mexico	458	Jan 08-Dec 08	5 700	2 900	8 500	...	5%	16%	757 863	37%	58	1%

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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		Reported number of children receiving antiretroviral therapy	Period	Estimated number of children needing antiretroviral therapy based on UNAIDS/WHO methods, 2008 ^b			Estimated antiretroviral therapy coverage among children, December 2008 ^d		
Reported number	Estimated coverage	Reported number	Estimated coverage			Estimate	Low estimate	High estimate	Estimate	Low estimate	High estimate
...		391	21%	782	Dec 08	...			...
...		...		29	Dec 08	...	<500	<1 000	...	5%	10%
...		5 ⁱ	2%	23	Dec 08	...	<100	<200	...	13%	55%
10	2%	...		562	Dec 08	...	<100	<500	...	>95%	>95%
...		...		14	Dec 08	<1 000	<500	<1 000	3%	2%	6%
225	15%	...		249	Dec 08	<1 000	<500	1 400	29%	17%	54%
895	2%	...		7 399	Dec 08 ^e	23 000	12 000	34 000	33%	22%	61%
2	25%	1	13%	0	Dec 08	...	<100	<100	...	0%	0%
219	12%	...		217	Dec 08 ^e	<1 000	<500	1 300	26%	16%	58%
393	38%	...		309	Dec 08	...	<200	<1 000	...	44%	>95%
19	>95%	19	>95%	24	Dec 08	...	<100	<100	...	>95%	>95%
...		...		829	Dec 08	5 900	2 600	9 200	14%	9%	31%
...		...		2	Dec 07	...			...
222	10%	...		399	Dec 08	...	<1 000	1 700	...	23%	54%
869	16%	4 ^t	<1%	511	Dec 08 ^e	2 400	1 100	3 600	22%	14%	47%
...		0	0%	97	Dec 08	<1 000	<500	1 200	13%	8%	26%
90 ^h	60%	...		165	Dec 08	...	<100	<200	...	>95%	>95%
448	8%	...		1 288	Dec 08	3 600	2 500	4 700	36%	27%	52%
...		229	34%	660	Dec 08	...	<1 000	1 100	...	63%	>95%
...		...		7	Dec 07 ^f	...	<100	<100	...	>95%	>95%
1 200 ^h	2%	...		13 211	Dec 08	...	16 000	46 000	...	29%	82%
25 ⁱ	1%	...		356	Dec 08	...	<500	1 500	...	24%	78%
20	2%	7	1%	30	Sep 08	...	<500	<1 000	...	4%	11%
0		...		0	Dec 08	...			...
...		...		400	Dec 08	...	<500	<500	...	94%	>95%
0		1		2	Dec 08	...			...
148	>95%	181	>95%	132	Dec 08	...	<100	<100	...	>95%	>95%
2 091	2%	...		20 517	Dec 08	49 000	25 000	71 000	42%	29%	83%
...		...		0	Dec 08	...			...
27	15%	0	0%	37	Dec 08	...	<100	<200	...	28%	>95%
17	10%	...		72	Dec 08	...	<100	<200	...	53%	>95%
...		...		23	Dec 08	...	<100	<100	...	>95%	>95%
...		...		9	Dec 07 ^f	...	<100	<100	...	28%	69%
1 542	11%	...		3 038	Dec 08	7 300	4 300	9 700	42%	31%	70%
112 ^x	4%	4 ^x	<1%	92	Sep 07 ^f	1 100	<1 000	1 800	8%	5%	17%
...		...		...					0%		
...		10	>95%	1	Dec 08	...	<100	<100	...	50%	>95%
...		2 ^k	<1%	4	Dec 08	...	<200	1 000	...	0%	3%
21 841	37%	1 752	3%	13 600	Dec 08	...	17 000	45 000	...	33%	84%
...		185	17%	501	Dec 08	...	<500	<1 000	...	55%	>95%
0	0%	0	0%	0	Dec 08	...	<100	<100	...	0%	0%
4 507	>95%	...		1 383	Dec 08 ^l	...	<1 000	3 400	...	41%	>95%
...		...		0	Dec 08		
18 ^l	4%	...		13	Dec 08 ^o	...	<100	<1 000	...	3%	14%
...				<100	<100	...	0%	0%
...		...		1 356	Dec 08 ^l	...	1 300	3 600	...	38%	>95%

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Low- and middle-income countries ^a	Number of pregnant women living with HIV who received antiretrovirals for preventing mother-to-child transmission	Period	Estimated number of pregnant women living with HIV needing antiretrovirals for preventing mother-to-child transmission based on UNAIDS/WHO methods ^b			Estimated percentage of pregnant women living with HIV who received antiretrovirals for preventing mother-to-child transmission ^c			Pregnant women tested for HIV		Infants born to women living with HIV receiving antiretrovirals for preventing mother-to-child transmission	
			Estimate	Low estimate	High estimate	Estimate	Low estimate	High estimate	Reported number	Estimated coverage	Reported number	Estimated coverage
Micronesia (Federated States of)	...		...			...			...		...
Mongolia	0	Jan 08-Dec 08	<100	<100	<100	...	0%	0%	...		0	0%
Montenegro	1	Jan 07-Dec 07	...			...			...		1 ^f	
Morocco	56	Jan 08-Dec 08	<500	<200	<1 000	...	9%	33%	2 723	<1%	20	5%
Mozambique	46 848	Jan 08-Dec 08	110 000	50 000	180 000	42%	26%	93%	523 009	60%	38 822	35%
Myanmar	1 377	Jan 08-Dec 08	5 200	2 100	10 000	...	14%	65%	178 722	18%	1 435	28%
Namibia	7 474	Jan 08-Dec 08	8 200	4 400	12 000	91%	63%	>95%	52 625	90%	8 270 ^d	>95%
Nauru	...		...			...			...		...
Nepal	47	Jan 08-Dec 08	1 400	<1 000	2 100	...	2%	6%	43 733	6%	58	4%
Nicaragua	53	Jan 08-Dec 08	<100	<100	<100	...	65%	>95%	55 340	40%	53	>95%
Niger	1 183	Jan 08-Dec 08	3 700	1 800	6 200	...	19%	67%	117 490	15%	201	5%
Nigeria	19 804	Jan 08-Dec 08	210 000	110 000	300 000	10%	7%	18%	605 875	10%	13 883	7%
Niue	...		...			...			...		...
Oman	4	Jan 08-Dec 08	<100	<100	<100	...	11%	44%	...		4	21%
Pakistan	14	Jan 08-Dec 08	1 800	<1 000	3 700	...	<1%	2%	6 926	<1%	11	1%
Palau	...		...			...			...		...
Panama	71 ^e	Jan 07-Dec 07	<500	<100	<1 000	...	13%	>95%	...		154 ^e	70%
Papua New Guinea	257	Jan 08-Dec 08	1 900	<1 000	2 900	13%	9%	28%	44 580	22%	99	5%
Paraguay	156	Jan 08-Dec 08	<500	<200	<1 000	...	29%	>95%	55 266	36%	121	38%
Peru	477	Jan 08-Dec 08	<1 000	<500	1 600	...	29%	>95%	425 480	70%	402	44%
Philippines	1	Jan 08-Dec 08	<200	<100	<500	...	<1%	1%	1 736	<1%	1	1%
Poland	70	Jan 08-Dec 08	<200	<100	<500	...	25%	>95%	...		69	44%
Republic of Moldova	129	Jan 08-Dec 08	... ^h			...			44 150	>95%	123	
Romania	109	Jan 08-Dec 08	<200	<100	<500	...	32%	>95%	100 168	47%	161	88%
Russian Federation	8 367	Jan 08-Dec 08	... ^h			...			1 468 091 ^d	95%	8 744	
Rwanda	7 197	Jan 08-Dec 08	10 000	5 000	16 000	72%	45%	>95%	294 704	73%	5 686	57%
Saint Kitts and Nevis	...		...			...			...		...
Saint Lucia	11	Jan 07-Dec 07	...			...			...		...
Saint Vincent and the Grenadines	...		...			...			...		...
Samoa	...		...			...			...		...
Sao Tome and Principe	22	Jan 08-Dec 08	...			...			6 281	>95%	11	
Senegal	473	Jan 08-Dec 08	3 600	1 600	5 600	...	8%	29%	111 210	24%	299	8%
Serbia	2	Jan 08-Dec 08	<100	<100	<100	...	3%	12%	5 665	5%	1	3%
Seychelles	2	Jan 08-Dec 08	...			...			1 748		3	
Sierra Leone	1 018	Jan 08-Dec 08	3 300	1 700	5 000	31%	20%	60%	91 212	41%	518	16%
Slovakia	0	Jan 08-Dec 08	...			...			...		...
Solomon Islands	0	Jan 08-Dec 08	...			...			41	<1%	1	
Somalia	6	Jan 08-Dec 08	1 900	<1 000	3 100	...	<1%	1%	1 131	<1%	6	<1%
South Africa	149 118	Jan 08-Dec 08	200 000	120 000	280 000	73%	53%	>95%	848 496	78%	119 395	59%
Sri Lanka	5	Jan 08-Dec 08	<100	<100	<200	...	5%	22%	12 239	3%	6	11%
Sudan	68 ^e	2007-2008	12 000	5 800	20 000	1%	<1%	1%	9 192 ^d	1%	21	
Suriname	35	Jan 06-Dec 06	<100	<100	<200	...	22%	>95%	7 156 ^d	73%	...	
Swaziland	10 811 ^g	Jan 08-Dec 08	9 700	6 000	12 000	>95%	87%	>95%	27 313 ⁱ	78%	8 469 ⁱ	87%
Syrian Arab Republic	0	Jan 07-Dec 07	...			...			4 ^f	0%	...	
Tajikistan	21	Jan 08-Dec 08	... ^h			...			40 171	21%	16	
Thailand	5 769	Oct 07-Sep 08	9 000	2 700	17 000	...	33%	>95%	797 047	82%	5 872	65%

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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		Reported number of children receiving antiretroviral therapy	Period	Estimated number of children needing antiretroviral therapy based on UNAIDS/WHO methods, 2008 ^a			Estimated antiretroviral therapy coverage among children, December 2008 ^a		
Reported number	Estimated coverage	Reported number	Estimated coverage			Estimate	Low estimate	High estimate	Estimate	Low estimate	High estimate
...		...		0	Dec 08	...			...
0	0%	0	0%	0	Dec 08	...	<100	<100	...	0%	0%
...		...		1	Dec 08	...			...
19	5%	4	1%	106	Dec 08	...	<100	<500	...	48%	>95%
...		...		9 393	Dec 08	45 000	24 000	67 000	21%	14%	40%
265 ⁿ	5%	...		966	Dec 08	...	1 400	4 700	...	21%	71%
...		1 334	16%	7 504	Dec 08	5 800	3 100	7 800	>95%	>95%	>95%
...		...		0	Dec 08	...			...
57	4%	...		119	Dec 08	...	<500	1 200	...	10%	26%
49	>95%	...		68	Dec 08	...	<100	<100	...	>95%	>95%
201	5%	...		140	Dec 08	...	<1 000	3 200	...	4%	16%
5 650	3%	...		12 565	Dec 08	110 000	57 000	160 000	12%	8%	22%
...		...		0	Dec 08	...			...
4	21%	4	21%	30	Dec 08	<100	<100	<100	...	>95%	>95%
1	0%	...		38	Dec 08	<1 000	<500	1 400	...	3%	12%
...		...		0	Dec 08	...			...
62 ^d	28%	...		267	Dec 08	<200	<100	<500	...	90%	>95%
99	5%	0	0%	329	Dec 08	<1 000	<1 000	1 500	33%	22%	61%
121	38%	2	1%	130	Dec 08	<200	<100	<200	...	67%	>95%
...		...		426	Dec 08	<500	<200	<1 000	...	58%	>95%
1	1%	...		11	Dec 08	<100	<100	<200	...	8%	31%
...		69	44%	117	Dec 08	<100	<100	<100	...	>95%	>95%
28		74		31	Dec 08	...			...
3	2%	...		216	Dec 08	<500	<100	<1 000	...	33%	>95%
...		...		1 998	Dec 08	...			...
5 347	53%	2 790	28%	5 635	Dec 08	5 600	2 600	8 300	>95%	68%	>95%
...			
...		...		2	Sep 07	...			...
...			
...			
11		...		5	Dec 08	...			...
...		...		586	Dec 08 ⁱ	...	<1 000	2 800	...	21%	68%
1	3%	1	3%	10	Dec 08	...	<100	<100	...	>95%	>95%
3		...		11	Dec 08	...			...
363	11%	0	0%	237	Dec 08 ^f	1 300	<1 000	2 100	18%	11%	38%
...		...		0	Dec 08	...			...
0		...		...		...			...
0	0%	...		9	Dec 08	...	<500	1 400	...	1%	2%
...		...		57 228	Dec 08	94 000	53 000	130 000	61%	45%	>95%
5	9%	0	0%	7	Dec 08	...	<100	<100	...	16%	64%
14 ^m	0%	...		153	Dec 08 ^j	6 200	2 900	10 000	2%	1%	5%
...		...		58	Dec 07	...	<100	<200	...	48%	>95%
8 238	85%	2 925	30%	2 897	Dec 08 ^l	3 200	2 000	4 100	89%	70%	>95%
...		...		4	Dec 07	...			...
1 ^l		1 ^l		4	Dec 08	...			...
...		...		8 736	Dec 08	...	11 000	17 000	...	52%	81%

TOWARDS UNIVERSAL

Low- and middle-income countries ^a	Number of pregnant women living with HIV who received antiretrovirals for preventing mother-to-child transmission	Period	Estimated number of pregnant women living with HIV needing antiretrovirals for preventing mother-to-child transmission based on UNAIDS/WHO methods ^b			Estimated percentage of pregnant women living with HIV who received antiretrovirals for preventing mother-to-child transmission ^c			Pregnant women tested for HIV		Infants born to women living with HIV receiving antiretrovirals for preventing mother-to-child transmission	
			Estimate	Low estimate	High estimate	Estimate	Low estimate	High estimate	Reported number	Estimated coverage	Reported number	Estimated coverage
The former Yugoslav Republic of Macedonia	0	Jan 08-Dec 08	...			...			...		0	
Timor-Leste	1	Jan 08-Dec 08	...			...			71	<1%	1	
Togo	1 127	Jan 08-Dec 08	6 300	3 100	9 800	18%	12%	37%	30 709	14%	1 162	19%
Tonga	...		...			...			...		...
Tunisia	1	Jan 08-Dec 08	<100	<100	<100	...	2%	7%	...		1	3%
Turkey	4	Jan 06-Dec 06	...			...			2 070 ^k	<1%	4 ^t	
Turkmenistan	0	Jan 06-Dec 06	...			...			...		...
Tuvalu	...		...			...			...		...
Uganda	41 598	Oct 07-Sep 08	82 000	44 000	120 000	50%	36%	95%	830 023	57%	13 914 ^u	17%
Ukraine	3 368	Jan 08-Dec 08	2 600	1 200	4 100	...	82%	>95%	552 250	>95%	3 683	>95%
United Republic of Tanzania	70 944	Jan 08-Dec 08	... ^h	40 000	130 000	...	53%	>95%	919 377	52%	41 347	48%
Uruguay	53	Jan 06-Dec 06	... ^h			...			5 852	12%	68 ^t	
Uzbekistan	95	Jan 07-Dec 07	<500	<200	<1 000	...	17%	74%	58 063 ^v	10%	120 ⁱ	40%
Vanuatu	...		...			...			1 499 ^w	21%	0	
Venezuela (Bolivarian Republic of)	310	Jan 06-Dec 06	2 400	1 200	4 100	...	8%	27%	...		...
Viet Nam	1 354	Jan 08-Dec 08	3 300	1 600	5 100	...	27%	87%	351 625	24%	908	28%
Yemen	3	Jan 08-Dec 08	...			...			0	0%	2	
Zambia	41 286	Jan 08-Dec 08	70 000	38 000	96 000	59%	43%	>95%	364 331	67%	24 026	34%
Zimbabwe	18 756	Jan 08-Dec 08	53 000	29 000	73 000	36%	26%	64%	130 240	34%	13 575	26%

- a See the country classification by income, level of the epidemic and geographical, UNAIDS, UNICEF and WHO regions.
- b The needs estimates are based on the methods described in the explanatory notes to the annexes and in Box 1. The estimates for individual countries may differ according to the local methods used.
- 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 ranges in coverage estimates are based on plausibility bounds in the denominator: that is, low and high estimates of need. Point estimates and ranges are given for countries with a generalized epidemic, whereas only ranges are given for countries with a low-level or concentrated epidemic.
- d The coverage estimates are based on the estimated unrounded numbers of children receiving antiretroviral therapy and the estimated unrounded need for antiretroviral therapy (based on UNAIDS/WHO methods). The ranges in coverage estimates are based on plausibility bounds in the denominator: that is, low and high estimates of need. 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.
- e The latest available breakdowns refer to partial or cumulative data sets and do not reflect national-level data. See Annex 1 of Towards Universal Access for national-level data.
- f The latest available breakdowns are less recent than the latest reported national-level data. See Annex 1 of Towards Universal Access for the latest reported national-level data.
- g The data are from the International Centre for Diarrhoeal Disease Research, Bangladesh prevention of parent-to-child transmission pilot site.
- h Estimates of the number of pregnant women living with HIV needing antiretrovirals for preventing mother-to-child transmission are currently being reviewed and will be adjusted, as appropriate, based on ongoing data collection and analysis. Therefore, some countries have requested that only a range be published or no needs at all.
- i The latest reported data are to December 2007.
- j Estimates of the number of children needing antiretroviral therapy are currently being reviewed and will be adjusted, as appropriate, based on ongoing data collection and analysis. Therefore, some countries have requested only a range to be published or no needs at all.
- k The latest reported data are to December 2006.
- l Includes data for the private sector.
- m The data correspond to women diagnosed in the Centros Departamentales de Vigilancia y Referencia de ITS.
- n The data reported are incomplete.
- o Co-trimoxazole prophylaxis is given to mothers upon delivery with instructions to be administered when the baby is two months old.
- p Data are collected from 333 priority counties out of a total of 2860.
- q This strategy is in the early stages of implementation, and some sites are not yet collecting significant data.
- r The data are from the three antenatal care clinics based at the three tertiary-level hospitals (January 2008-December 2008)
- s The data are based on the total number of women attending Colonial War Memorial Hospital, Lautoka Hospital and Labasa Hospital and who had their HIV tests done between January 2008 and December 2008.
- t The data are reported for the period January 2007-November 2007.
- u The data are from the United States President's Emergency Plan for AIDS Relief and the Sogebank Foundation/Global Fund (January 2008-December 2008).
- v The latest reported data are to August 2007.
- w The data are from a survey done among pregnant women in three hospitals in Vientiane, between November 2007 and March 2008.
- x The latest reported data are to September 2007.
- y The 2008 reporting system for services for preventing mother-to-child transmission did not provide for combination antiretroviral regimen prophylaxis. However, through the 2008 National HIV Situation Analysis, data on combination regimens were collected from five health centres.
- z Data are not available due to lack of age-disaggregated data; however, co-trimoxazole prophylaxis is routinely provided to HIV-exposed newborns.

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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		Reported number of children receiving antiretroviral therapy	Period	Estimated number of children needing antiretroviral therapy based on UNAIDS/WHO methods, 2008 ^b			Estimated antiretroviral therapy coverage among children, December 2008 ^a		
Reported number	Estimated coverage	Reported number	Estimated coverage			Estimate	Low estimate	High estimate	Estimate	Low estimate	High estimate
0		0		1	Dec 08	...			...
...		...		3	Dec 08	...			...
737	12%	...		672	Dec 08	3 100	1 400	5 000	22%	14%	49%
...		...		0	Dec 08	...			...
...		...		10	Dec 08	...	<100	<100	...	38%	>95%
...		...		9	Dec 07 ^{e,f}	...			...
...		...		0	Jan 06	...			...
...		...		0	Dec 08	...			...
...		...		13413	Sep 08	42 000	23 000	60 000	32%	23%	59%
2 817	>95%	1 473	57%	1256	Dec 08	...	<500	1 600	...	80%	>95%
...		...		12822	Dec 08	40 000	20 000	66 000	32%	20%	65%
70 ^k		70 ^k		160	Dec 06 ^{e,f}	... ⁱ			...		
...		...		225	Dec 07 ^{e,f}	...	<100	<200	...	>95%	>95%
...		...		1	Dec 08	...			...
...		...		611	Dec 06	...	<1 000	2 400	...	25%	84%
...		...		1462	Dec 08	...	<1 000	2 500	...	58%	>95%
1		0		9	Dec 08	...			...
19 040	27%	19 044	27%	18040	Dec 08	34 000	18 000	47 000	53%	38%	>95%
9 816	19%	...		13254	Dec 08 ^g	37 000	22 000	50 000	36%	27%	60%

- a/ The number of infants receiving antiretrovirals for preventing mother-to-child transmission is slightly higher than the number of women receiving antiretrovirals for preventing mother-to-child transmission because some women who deliver at home bring their children to facilities within 72 hours of birth and receive an infant dose of antiretroviral drug.
- b/ The data for Panama were reported from January 2007 to September 2007. The data were projected to a 12-month period based on the monthly increase value. The reported value was 53.
- c/ The data are from three of four paediatric care clinics.
- d/ Russian Federation reported 4 827 215 pregnant women being tested for HIV. As the number of pregnant women tested likely reflects double or triple counting, 95% of the estimated number of births in Russia (1 545 359) was used as a proxy and most likely represents the total number of tests conducted among pregnant women.
- e/ Two separate reports were received from Sudan: Northern Sudan reported 68 for the period between 2007 and 2008; southern Sudan was not able to report on HIV-infected pregnant women receiving ARVs for PMTCT, as the PMTCT program is just starting to be implemented. However, southern Sudan reported 21 women receiving ART for their own health, but is not included in the total.
- * Two separate reports were received from Sudan: Northern Sudan reported 9 122 for the period between 2007 and 2008, and southern Sudan reported 70 for the period January-December 2008, giving a total of 9 192.
- ** The most recent data available are from: WHO/UNAIDS/UNICEF. Towards universal access: scaling up priority HIV/AIDS interventions in the health sector. Progress report 2008.
- *** The data may include double-counting. If a woman's CD4 count falls below the normal threshold level (350 per mm²), she will be initiated on antiretroviral therapy, which means she will be double counted.
- † HIV testing in labour and delivery is performed for women with unknown HIV status but is mixed with repeat HIV tests for women who were tested earlier in the pregnancy.
- ‡ The reported value may be an undercount due to a proportion of women who deliver at home and who received antiretroviral prophylaxis to take home from antenatal care facilities.
- # Data were collected from Northern District Hospital, Vila Central Hospital, Leneakel Hospital, Lolowai Hospital and Norsup Hospital.

Annex 2. Numbers of children younger than 15 years receiving and needing antiretroviral therapy and numbers of pregnant women needing and receiving antiretrovirals for preventing mother-to-child transmission in low- and middle-income countries by WHO and UNICEF regions, 2008

WHO Regions	Number of children younger than 15 years receiving antiretroviral therapy, December 2008	Estimated number of children needing antiretroviral therapy, 2008 [range] ^a	Antiretroviral therapy coverage among children, December 2008 [range]	Number of pregnant women living with HIV receiving antiretrovirals for preventing mother-to-child transmission, 2008	Estimated number of pregnant women with HIV needing antiretrovirals for preventing mother-to-child transmission, 2008 [range] ^b	Estimated percentage of pregnant women living with HIV receiving antiretrovirals for preventing mother-to-child transmission, 2008 [range] ^b
African Region	224 900	640 000 [500 000-770 000]	35% [29-45%]	576 800	1 280 000 [990 000-1 600 000]	45% [37-58%]
Region of the Americas	16 000	21 000 [18 000-25 000]	76% [65-91%]	17 100	32 000 [24 000-41 000]	54% [42-71%]
Eastern Mediterranean Region	<500	8 900 [5 300-14 000]	5% [3-8%]	<500	18 000 [11 000-28 000]	1% [1-2%]
European Region	4 200	4 900 [2 700-7 500]	85% [56 - >95%]	12 600	13 400 [8 100-20 000]	94% [64 - >95%]
South-East Asia Region	23 400	47 000 [32 000-65 000]	49% [35-72%]	18 100	65 000 [38 000-100 000]	28% [18-47%]
Western Pacific Region	6 600	9 500 [5 600-14 000]	74% [49 - >95%]	3 600	15 600 [7 400-26 000]	23% [14-48%]
All low- and middle-income countries	275 700	730 000 [580 000-880 000]	38% [31-47%]	628 400	1 400 000 [1 100 000-1 700 000]	45% [37-57%]
UNICEF Regions						
Africa^c	225 300	650 000 [510 000-780 000]	35% [29-44%]	577 000	1 290 000 [1 000 000-1 600 000]	45% [37-57%]
Sub-Saharan Africa^d	225 100	650 000 [510 000-780 000]	35% [29-44%]	576 900	1 300 000 [1 000 000-1 600 000]	45% [37-57%]
Eastern and Southern Africa	195 100	440 000 [340 000-540 000]	44% [36-57%]	516 400	900 000 [680 000-1 100 000]	58% [47-76%]
Western and Central Africa	29 800	200 000 [140 000-260 000]	15% [11-22%]	60 300	380 000 [260 000-510 000]	16% [12-23%]
North Africa and the Middle East	<500	7 600 [4 100-12 000]	6% [4-11%]	<500	15 000 [8 300-24 000]	2% [1-3%]
Latin America and the Caribbean	16 100	21 000 [18 000-25 000]	76% [65-91%]	17 100	32 000 [24 000-41 000]	54% [42-71%]
Asia	30 000	57 000 [41 000-77 000]	53% [39-74%]	21 700	82 000 [52 000-120 000]	26% [17-42%]
East Asia and Pacific	16 600	26 000 [20 000-34 000]	65% [49-82%]	10 900	30 000 [18 000-46 000]	37% [23-61%]
South Asia	13 400	31 000 [18 000-48 000]	43% [28-76%]	10 800	52 000 [28 000-86 000]	21% [13-38%]
Central and Eastern Europe and the Commonwealth of Independent States^e	4 100	4 900 [2 700-7 500]	82% [54 - >95%]	12 500	13 200 [7 900-19 000]	95% [65 - >95%]
All low- and middle-income countries	275 500	730 000 [580 000-880 000]	38% [31-47%]	628 300	1 400 000 [1 100 000-1 700 000]	45% [37-57%]

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

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

b The coverage estimate is based on the unrounded 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.

c Africa includes all countries in the Eastern and Southern Africa region, all countries in the Western and Central Africa region and the following countries in the Middle East and North Africa region: Algeria, Djibouti, Egypt, Libyan Arab Jamahiriya, Morocco, Sudan and Tunisia.

d UNICEF includes values from Djibouti and Sudan in the total for sub-Saharan Africa, while the values for these countries are excluded in the subregions in Africa.

e 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.

Annex 3. 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 (Plurinational State of)	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

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Country	Classification of economy	Level of epidemic	Geographical region	UNAIDS region	UNICEF region	WHO region
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
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*	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

Country	Classification of economy	Level of epidemic	Geographical region	UNAIDS region	UNICEF region	WHO 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)	Concentrated	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	Concentrated	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
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
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

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Country	Classification of economy	Level of epidemic	Geographical region	UNAIDS region	UNICEF region	WHO 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	Concentrated	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	Oceania	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
Poland	Upper middle income	Concentrated	Europe and Central Asia	Western and Central Europe	Industrialized countries	European Region
Republic of 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
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	Low	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

Country	Classification of economy	Level of epidemic	Geographical region	UNAIDS region	UNICEF region	WHO 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	Low	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	Concentrated	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 ^a	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	Low	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	Low	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
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

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Country	Classification of economy	Level of epidemic	Geographical region	UNAIDS region	UNICEF region	WHO 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 WHO classifies Djibouti under Eastern Mediterranean Region. UNICEF classifies Djibouti both under Middle East and North Africa and sub-Saharan Africa.

b For the analysis throughout the report, values for Sudan have been included in Middle East and North Africa based on UNAIDS classification, while UNICEF classifies Sudan both under Middle East and North Africa, and sub-Saharan Africa.

EXPLANATORY NOTES

Data collection and validation

Annex 1 presents country data related to two priority health sector interventions for HIV: prevention of mother-to-child transmission and paediatric HIV care and treatment.

UNICEF, WHO and UNAIDS collected the data presented in this annex through the annual reporting form for monitoring the health sector response to HIV/AIDS (1) (see Section 1.5).

The reporting form was sent to countries in January 2009. 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. Data was sent to regional offices and to WHO and UNICEF Headquarters between March and May 2009.

In addition, an international data reconciliation process was conducted 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. 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 Annex 1

Prevention of mother-to-child transmission

Annex 1 provides data on indicators collected through the WHO, UNICEF and UNAIDS annual reporting form for monitoring the health sector response to HIV/AIDS (1).

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.

A total of 123 countries reported data for 2008. These 123 countries accounted for 97% of the 124 million women who gave birth in low- and middle-income countries in 2008 and nearly all (99.8%) of the estimated 1.4 million pregnant women living with HIV in low- and middle-income countries. All of these women are in need of effective interventions to prevent mother-to-child transmission of HIV, including antiretroviral treatment or prophylaxis for preventing transmission of the virus to their children. Data analyzed in this chapter is based on the 123 low- and middle-income countries that reported data on women and children.

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 antiretrovirals 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) (4). 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.

Annex 1 presents uncertainty ranges around the estimated population HIV positive pregnant women 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.

The 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. The 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.

Number of children receiving antiretroviral therapy

This report provides the most recent reported data on the number of children younger than 15 years of age receiving antiretroviral therapy as of end of 2008 in low- and middle-income countries. Data on the number of children receiving antiretroviral therapy are available for 142 countries.

Estimating treatment needs and coverage for children

Annex 1 reports on country estimated treatment needs and coverage for children younger than 15 years by country in 2008.

Paediatric treatment needs are estimated using standard UNAIDS/WHO methods (4), including uncertainty ranges (Box 1).

According to WHO guidelines, all children living with HIV younger than one year of age need antiretroviral therapy. After the age of one year, the children needing treatment are defined as the children living with HIV who have moderate to severe disease (5). The number of children needing antiretroviral therapy in a given year is based primarily on the number of infants newly infected with HIV and their survival to the time when they need antiretroviral therapy. The number of infants newly infected with HIV is a function of the HIV prevalence among pregnant women and the estimated rate of mother-to-child transmission according to antiretroviral regimen coverage and infant feeding practices.

The estimates of antiretroviral therapy coverage for children presented in Annex 1 were calculated by dividing the number of children receiving antiretroviral therapy as of end of 2008 by the number of children estimated to need treatment in 2008 (based on UNAIDS/WHO methods). Ranges around the levels of coverage are based on the uncertainty ranges around the estimates of need (6).

In addition, Annex 1 also presents data on the following indicators:

- the number and percentage of pregnant women tested for HIV (percentage is calculated by dividing the number of pregnant women tested for HIV by the estimated number of births in 2008);
- the number and percentage of infants born to women living with HIV receiving antiretrovirals for preventing mother-to-child transmission (percentage is calculated by dividing the number of infants born to women living with HIV receiving antiretroviral drugs by the estimated number of pregnant women living with HIV who need antiretroviral drugs for preventing mother-to-child transmission in the country in 2008);
- the number and percentage of infants born to women living with HIV receiving co-trimoxazole within two months of birth (percentage is calculated by dividing the number of infants born to women living with HIV receiving co-trimoxazole within two months of birth by the estimated number of pregnant women living with HIV who need antiretroviral drugs for preventing mother-to-child transmission in the country in 2008. This is used as a proxy for the estimated number of infants born to women living with HIV, assuming a ratio of one child to one woman living with HIV); and
- the number and percentage of infants born to women living with HIV receiving a virological test by two months (percentage is calculated by dividing the number of infants born to women living with HIV receiving a virological test within two months of birth by the estimated number of pregnant women living with HIV who need antiretroviral drugs for preventing mother-to-child transmission in the country in 2008. This is used as a proxy for the estimated number of infants born to women living with HIV, assuming a ratio of one child to one woman living with HIV).

ACCESS

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 (7).

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 to significant 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.¹ 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.

¹ 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.

TOWARDS UNIVERSAL

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 ($n = 21$).

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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LIST OF WOMEN AND CHILDREN INDICATORS IN THE WHO, UNICEF AND UNAIDS ANNUAL REPORTING FORM FOR MONITORING THE HEALTH SECTION RESPONSE TO HIV/AIDS, 2009

Women and children

- #11 Number of antenatal care attendees
- #12 Number of facilities providing antenatal care services
- #13 Percentage of facilities providing antenatal care services that also provide CD4 testing on site or have a system for collecting and transporting blood samples for CD4 testing for pregnant women
- #14 Number of facilities providing antenatal care services that also provide HIV testing and counselling for pregnant women
- #15 Percentage of health facilities providing antenatal care services that offer both HIV testing and antiretrovirals for the prevention of mother-to-child transmission on site
- #16 Percentage of health facilities that offer paediatric antiretroviral therapy (i.e., prescribe and/or provide clinical follow-up)
- #17 Percentage of health facilities that provide virological testing services (i.e., polymerase chain reaction (PCR)) for infant diagnosis on site or through dried blood spots (DBS)
- #18 Percentage of pregnant women who were tested for HIV and received their results – during pregnancy, during labour and delivery and during the postpartum period (<72 hours), including those with previously known HIV status
- #19 Percentage of male partners of pregnant women attending antenatal care who know their HIV status
- #110 Percentage of HIV-infected pregnant women who received antiretrovirals to reduce the risk of mother-to-child transmission
- #111 Percentage of HIV-infected pregnant women assessed for antiretroviral therapy eligibility through either clinical staging or CD4 testing
- #112 Percentage of HIV-infected pregnant women receiving antiretroviral therapy for their own health
- #113 Percentage of infants born to HIV-infected women receiving any antiretroviral prophylaxis for prevention of mother-to-child transmission
- #114 Percentage of infants born to HIV-infected women started on co-trimoxazole prophylaxis within two months of birth
- #115 Percentage of infants born to HIV-infected women who received an HIV test within 12 months
- #116 Distribution of feeding practices (exclusive breastfeeding, replacement feeding, mixed feeding/other) for infants born to HIV-infected women at 3 months
- #117 Percentage of HIV-infected children aged 0-14 years who are currently receiving antiretroviral therapy

For more information, contact:

United Nations Children's Fund
3 United Nations Plaza
New York, NY 10017
USA
Tel.: (+1 212) 326-7000
pubdoc@unicef.org
www.unicef.org

UNAIDS Secretariat
20, avenue Appia
CH-1211 Geneva 27
Switzerland
Tel.: (+41 22) 791-3666
Fax: (+41 22) 791-4187
unaids@unaids.org
www.unaids.org

World Health Organization
20, avenue Appia
CH-1211 Geneva 27
Switzerland
Tel.: (+ 41 22) 791-2111
Fax: (+ 41 22) 791-3111
info@who.int; publications@who.int
www.who.int

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