Child health: HIV/AIDS

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Section 27 of the South African Constitution[1] provides that everyone has the right to have access to health care services. In addition, section 28(1)(c) gives children "the right to basic nutrition, basic health care services, and social services".

Article 14(1) of the African Charter on the Rights and Welfare of the Child[2] states that "every child shall have the right to enjoy the best possible state of physical, mental and spiritual health".

Article 24 of the UN Convention on the Rights of the Child says that State Parties[3] should recognise "the right of the child to the enjoyment of the highest attainable standard of health and to facilities for the treatment of illness and rehabilitation of health". It obliges the State to take measures "to diminish infant and child mortality" and "to combat disease and malnutrition".

HIV prevalence in pregnant women

The HIV prevalence amongst pregnant women is the proportion of pregnant women (aged 15 – 49 years) who are HIV positive. The majority of children who are HIV positive have been infected through mother-to-child transmission. Therefore the prevalence of HIV amongst infants and young children is largely influenced by the HIV prevalence of pregnant women and interventions to prevent mother-to-child transmission (PMTCT).

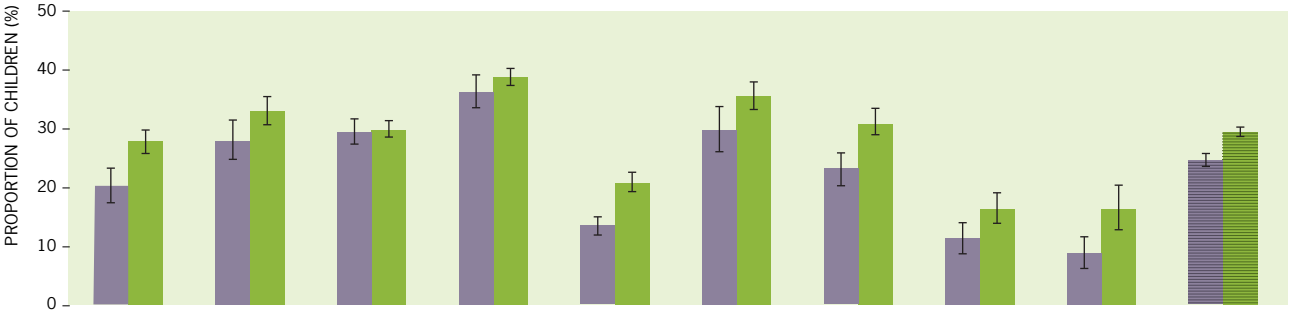
HIV prevalence is measured in the National HIV and Syphilis Prevalence Survey of the Department of Health, which targets pregnant women aged 15 – 49 years who attend a public health facility. The most recent estimate (2008) of HIV prevalence in pregnant women is 29%. Prevalence rates increased steadily from 25% in 2000 to 30% in 2005 and have remained at around this level. Results are reported in five-year age bands, and show that HIV-prevalence rates are consistently high amongst women in their early 30s (a prevalence rate of 40% in 2008) followed by those in their late 20s (38%).

There are substantial differences in HIV prevalence between South Africa's provinces. KwaZulu-Natal has consistently had the highest HIV rates, with prevalence in excess of 35% since 2002. In contrast, the Western Cape has had an HIV prevalence of around 15% in recent years. Other provinces with relatively low HIV prevalence are the Northern Cape and Limpopo, with HIV-prevalence levels at 16% and 21% respectively in 2008.

These inter-provincial differences are partly a reflection of differences in HIV prevalence between different racial and cultural groups. For example, male circumcision is believed to be a major factor explaining inter-regional differences in HIV prevalence within Africa,[4] and its prevalence differs substantially between South Africa's provinces.[5] Other factors such as differences in urbanisation, migration, socio-economic status and access to HIV-prevention and treatment services could also explain some of the differences in HIV prevalence between provinces.

The survey does not include pregnant women who attend private health facilities, or women who deliver at public health facilities without having made a booking visit. Women seeking antenatal care in the private health sector have a relatively low prevalence of HIV.[6] Thus the surveys over-estimate HIV prevalence in pregnant women generally.

Table 4a: HIV prevalence in pregnant women attending public antenatal clinics, 2000 & 2008



	EC	FS	GT	KZN	LP	MP	NW	NC	WC	SA
2000	20.2%	27.9%	29.4%	36.2%	13.2%	29.7%	22.9%	11.2%	8.7%	24.5%
2008	27.6%	32.9%	29.9%	38.7%	20.7%	35.5%	31.0%	16.2%	16.1%	29.3%
	1,737,000	813,000	2,958,000	2,841,000	1,404,000	982,000	925,000	296,000	1,508,000	13,465,000

Sources: Department of Health (2001; 2009) *National HIV and Syphilis Prevalence Survey 2000; National HIV and Syphilis Prevalence Survey 2008*. Pretoria: DoH.

Access to prevention of mother-to-child transmission programmes (PMTCT)

This indicator reflects the proportion of women attending public antenatal clinics who receive voluntary counselling and testing for HIV, as part of the PMTCT programme.

The roll-out of PMTCT has expanded dramatically in recent years, with the proportion of pregnant women receiving HIV counselling and testing increasing from approximately 7% in 2001/02 to 81% in 2007/08. It is only in the last two years that estimates have been reported for all provinces.

In 2001, the Department of Health introduced two pilot PMTCT sites in each province, although there were many additional sites already providing PMTCT in the Western Cape and Gauteng provinces at this time.[7] Following legal action by the Treatment Action Campaign in 2001 and 2002, the department was ordered to make PMTCT services available to all pregnant women; since that time, access to PMTCT has improved steadily in all provinces.

Access to PMTCT remains variable between provinces. The Western Cape, which began its PMTCT programme in 1999, had achieved a take-up rate of 44% in 2002/03 compared to a national average of 15.6% for the same period. The Northern Cape expanded its PMTCT provision dramatically in recent years and is now the province with the second highest proportion of pregnant women who are tested for HIV. Mpumalanga has consistently had one of the lowest levels of PMTCT roll-out, although its performance has improved substantially in recent years.

The proportion of pregnant women who receive HIV testing and counselling is a measure of three factors: First, the proportion of antenatal clinics that provide PMTCT services; second, the proportion of women who are offered HIV testing at PMTCT facilities; and third, the proportion of women who agree to be tested for HIV. Although it is often assumed that PMTCT facilities would offer HIV testing to all pregnant women, recent qualitative evidence suggests that a significant proportion of women attending PMTCT services are not offered testing due to shortages of counsellors, testing supplies and relevant forms.[8] Early experience suggested that 25 – 50% of women would decline the offer to be tested for HIV[9] but other evidence suggests that less than 10% of women decline the offer to be tested if there is individual counselling and if lay counsellors have been recruited[10].

A number of different data sources have been used for the years prior to 2005, and differences between data sets might therefore account for some of the changes observed from one year to the next. Estimates from provinces that experienced data problems have been omitted in the table below, but attempts were made to correct these problems for the purpose of estimating the national averages.

Table 4b:
Proportion of booked women attending public antenatal clinics who receive HIV testing, 2001 – 2008

Province	2001/02 %	2002/03 %	2003 %	2004 %	2005/06 %	2006/07 %	2007/08 %
Eastern Cape	1.7	6.7	–	–	–	75.3	88.3
Free State	4.6	15.8	31.1	33.7	40.4	66.9	80.1
Gauteng	–	20.0	17.6	39.0	47.4	60.6	73.3
KwaZulu-Natal	7.2	13.6	–	–	43.8	58.5	70.7
Limpopo	1.0	8.4	26.0	37.6	46.5	77.5	90.1
Mpumalanga	0.6	0.0	10.9	12.9	31.4	58.2	74.6
Northern Cape	5.0	4.6	18.2	16.4	59.1	81.5	88.5
North West	2.2	30.7	–	34.7	47.9	74.3	85.6
Western Cape	–	43.9	–	–	–	93.7	95.7
South Africa	**6.9**	**15.6**	**25.3**	**37.3**	**49.1**	**69.2**	**81.0**

Sources:

- McCoy D, Besser M, Visser R & Doherty T (2002) *Interim findings on the national PMTCT pilot sites*. Durban: Health Systems Trust.
- Ramkissoon A, Kleinschmidt I, Beksinska M, Smit J & Hlazo J & Mabude Z (2004) *National baseline assessment of sexually transmitted infections and HIV services in South African public health facilities 2002/2003*. Durban: Reproductive Health Research Unit, University of the Witwatersrand.
- Reagon G, Irlam J & Levin J (2004) *National Primary Health Care Facilities Survey 2003*. Durban: Health Systems Trust.
- Barron P, Day C, Loveday M & Monticelli F (2005) *The District Health Barometer: Year 1*. Durban: Health Systems Trust.
- Barron P, Day C, Monticelli F, Vermaak K, Okorafar O, Moodley K & Doherty T (2006) *The District Health Barometer: 2005/06*. Durban: Health Systems Trust.
- Barron P, Day C & Monticelli F (2007) *The District Health Barometer: 2006/07*. Durban: Health Systems Trust.
- Barron P, Day C & Monticelli F (2008) *The District Health Barometer: 2007/08*. Durban: Health Systems Trust.

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Access to antiretroviral treatment (ART) in adults

This indicator is defined as the proportion of HIV-infected adults progressing to AIDS in a particular year who initiate antiretroviral treatment (ART). It is calculated as the number of adults starting ART in a particular year, divided by the number of new adult AIDS cases over the same year. Adult access to ART is important for children because it has a direct impact on the health and survival of parents and other caregivers.

Prior to 2004, access to ART was limited mainly to beneficiaries of medical schemes and individuals receiving treatment through workplace treatment programmes. Towards the end of 2003, the Department of Health announced a comprehensive HIV/AIDS care, management and treatment plan, which included the provision of ART to all patients with a CD4+ count <200/μl, or an AIDS-defining illness, attending public health facilities.[11] New treatment guidelines published in 2010 additionally prioritise antiretrovirals for HIV patients co-infected with tuberculosis and initiation of lifelong ART for pregnant women with CD4+ counts below 350/μl.[12]

The implementation of the comprehensive HIV/AIDS plan led to a sharp increase in the proportion of newly eligible adults initiating treatment, from 4% in 2002/03, to 43% in 2007/08 (or roughly 200,000 individuals). The speed and extent of scale-up of the ART programme is unprecedented in the history of the health system in South Africa. However, despite progress in making ART available in the public health sector, there remains a vast unmet need for treatment.

There are substantial differences in access to ART across the provinces. Following the announcement of the comprehensive HIV/AIDS plan in 2003, the Western Cape introduced antiretroviral treatment much more rapidly than other provinces, with an estimated 68% of newly eligible adults starting treatment between mid-2007 and mid-2008. Over the same period, an even higher rate of coverage (90%) was achieved in the Northern Cape. Free State has had the lowest rate of antiretroviral coverage in recent years (28%).

There are several barriers to the expansion of the ART programme. Most critical are the lack of infrastructure and the shortage of trained health workers in many public health facilities, which make it difficult to devolve the provision of ART to the primary care level. It is also likely that a large proportion of individuals who are eligible for ART are either not aware of their HIV status or have not received a recent CD4 assessment. Stigma and confusion regarding the effectiveness of ART are likely to result in individuals avoiding diagnosis and treatment.

Table 4c: Proportion of adults newly eligible for ART who initiate treatment, 2002 – 2008

Province	2002/03 %	2003/04 %	2004/05 %	2005/06 %	2006/07 %	2007/08 %
Eastern Cape	4.3	7.0	19.1	31.8	36.4	43.8
Free State	3.0	3.2	8.7	13.2	21.5	27.5
Gauteng	3.7	8.3	16.7	28.1	29.3	36.6
KwaZulu-Natal	4.0	4.6	15.3	30.1	36.3	46.6
Limpopo	3.0	3.8	11.7	26.9	33.2	40.4
Mpumalanga	3.1	4.1	7.9	18.5	33.3	42.6
Northern Cape	4.0	6.6	28.9	43.2	74.4	90.4
North West	2.7	3.5	17.6	33.4	33.8	42.6
Western Cape	9.0	33.1	43.0	57.6	56.5	68.2
South Africa	**3.8**	**6.6**	**16.1**	**28.9**	**34.0**	**42.8**

Sources:

- Department of Health (2008) *National comprehensive HIV and AIDS plan statistics*. [Unpublished]
- Adam MA & Johnson LF (2009) Estimation of adult antiretroviral treatment coverage in South Africa. *South African Medical Journal*, 99: 661-667.
- Dorrington RE, Johnson LF, Bradshaw D & Daniel T (2006) *The demographic impact of HIV/AIDS in South Africa. National and provincial indicators for 2006*. Centre for Actuarial Research (UCT), Medical Research Council & Actuarial Society of South Africa.
- Barron P, Day C & Monticelli F (2007) *The District Health Barometer 2006/07*. Durban: Health Systems Trust.

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Note: Reporting periods run from mid-year to mid-year.

Access to antiretroviral treatment (ART) in children

This indicator is defined as the proportion of newly infected children starting antiretroviral treatment (ART). It is calculated as the number of children starting in a particular year, divided by the estimated number of new paediatric HIV infections over the same year. It is crucial for HIV-positive children to receive ART early. Without treatment, more than 30% of children who were infected at birth will die before their first birthday.[13]

Access to ART for children has improved substantially over the past six years, with the proportion of newly infected children starting treatment increasing from 2% between mid-2002 and mid-2003, to 37% between mid-2007 and mid-2008. More than 21,000 children started treatment during the 2007/08 period, approximately 5,000 more than in the previous year.

Antiretroviral coverage for children varies significantly between provinces, from 22% in the Free State to 97% in the Western Cape over the 2007/08 period. The Western Cape, Northern Cape and North West are the only provinces where ART reached more than half of children acquiring HIV.

The exceptionally high coverage in the Western Cape is not only the result of antiretroviral roll-out to children, but also a reflection of the success of the prevention of mother-to-child transmission (PMTCT) programme, which has dramatically reduced the annual number of new HIV infections in that province. Northern Cape has also performed well in treating newly infected children (96% in 2007/08).

Although the indicators of antiretroviral coverage suggest that adults have greater access to ART than children, the indicators for adults and children are not comparable because they reflect different definitions of antiretroviral eligibility. Recent guidelines recommend that antiretroviral treatment should be started in all HIV-infected children in the first year of life.[14] The number of children newly eligible for treatment in a particular year has therefore been calculated as the number of new paediatric HIV infections. The Department of Health guidelines that have been used until now, however, did not recommend immediate initiation of ART in infancy.[15] The calculations of antiretroviral coverage in adults are based on the assumption that adults are eligible only when they progress to AIDS, a relatively conservative assumption that is likely to lead to the over-estimation of adult ART coverage.

The numerator is the number of children starting ART between the middle of the stated year and the middle of the next year. This is derived from estimates of the cumulative numbers of children enrolled for treatment in the public health sector[16] and estimates of the total number of individuals receiving treatment through disease management and non-governmental programmes.[17]

The denominator is calculated as the ASSA2003 estimate of the number of new HIV infections in children over the same period. The proportions were calculated prior to publication of the revised ASSA model (ASSA2008), but the ASSA2003 estimates were updated to take into account revised estimates of access to PMTCT services.

Table 4d: Proportion of newly infected children who start ART, 2002 – 2008

Province	2002/03 %	2003/04 %	2004/05 %	2005/06 %	2006/07 %	2007/08 %
Eastern Cape	1.2	2.3	7.7	13.1	18.6	26.8
Free State	1.4	1.7	4.9	11.7	19.5	22.1
Gauteng	2.1	6.9	14.8	31.1	28.3	46.0
KwaZulu-Natal	1.6	2.2	7.4	20.8	26.4	30.6
Limpopo	0.8	1.2	4.6	9.0	13.2	35.9
Mpumalanga	1.3	1.8	3.0	12.2	20.4	29.4
Northern Cape	1.5	3.9	27.2	51.8	79.6	96.1
North West	1.3	1.6	6.9	18.9	35.0	50.7
Western Cape	20.1	36.8	51.1	58.5	86.2	96.9
South Africa	**2.1**	**3.9**	**9.4**	**20.8**	**26.5**	**36.9**

Sources:

- Department of Health (2008) *National Comprehensive HIV and AIDS plan statistics*. [Unpublished]
- Adam MA & Johnson LF (2009) Estimation of adult antiretroviral treatment coverage in South Africa. *South African Medical Journal*, 99: 661-667.
- Dorrington RE, Johnson LF, Bradshaw D & Daniel T (2006) *The demographic impact of HIV/AIDS in South Africa. National and provincial indicators for 2006*. Centre for Actuarial Research (UCT), Medical Research Council & Actuarial Society of South Africa.
- Barron P, Day C & Monticelli F (2008) *The District Health Barometer 2006/07*. Health Systems Trust.

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Notes: ① Only children under 15 years are included. ② Reporting periods run from mid-year to mid-year.

References

1 Constitution of the Republic of South Africa. Act 108 of 1996.
2 Secretary General of the African Union (1990) *African Charter on the Rights and Welfare of the Child. OAU resolution 21.8/49*. Addis Ababa: OAU.
3 Office of the High Commissioner of Human Rights (1989) *Convention on the Rights of the Child, UN General Assembly resolution 44/25*. Geneva: United Nations.
4 Auvert B, Buvé A, Ferry B, Caraël M, Morison L, Lagarde E, Robinson NJ, Kahindo M, Chege J, Rutenberg N, Musonda R, Laourou M & Akam E (2001) Ecological and individual level analysis of risk factors for HIV infection in four urban populations in sub-Saharan Africa with different levels of HIV infection. *AIDS*, 15(Suppl 4): S15-30;
Williams BG, Lloyd-Smith JO, Gouws E, Hankins C, Getz WM, Hargrove J, de Zoysa I, Dye C & Auvert B (2006) The potential impact of male circumcision on HIV in sub-Saharan Africa. *PLoS Medicine*, 3(7): e262.
5 Connolly C, Simbayi LC, Shanmugam R & Nqeketo A (2008) Male circumcision and its relationship to HIV infection. *South African Medical Journal*, 98(10): 789-794.
6 Wilkinson D (1999) HIV infection among pregnant women in the South African private medical sector. AIDS, 13 (13): 1783.
7 McCoy D, Besser M, Visser R & Doherty T (2002) *Interim findings on the national PMTCT pilot sites: Lessons and recommendations*. Durban: Health Systems Trust.
8 Nkonki LL, Doherty TM, Hill Z, Chopra M, Schaay N & Kendall C (2007) Missed opportunities for participation in prevention of mother to child transmission programmes: Simplicity of nevirapine does not necessarily lead to optimal uptake, a qualitative study. *AIDS Research and Therapy*, 4: 27.
9 See no. 7 above;
Mseleku M, Smith TH & Guidozzi F (2005) HIV seropositive in pregnant South African women who initially refuse routine antenatal HIV screening. *British Journal of Obstetrics and Gynaecology*, 112(3): 370-371.
10 Abdullah M, Young T, Bitalo L, Coetzee N & Myers J (2001) Public health lessons from a pilot programme to reduce mother-to-child transmission of HIV-1 in Khayelitsha. *South African Medical Journal*, 91: 579-583;
Coetzee D, Hilderbrand K, Boulle A, Draper B, Abdullah F & Goemaere E (2005) Effectiveness of the first district-wide programme for the prevention of mother-to-child transmission of HIV in South Africa. *Bulletin of the World Health Organization*, 83(7): 489-494;
Doherty T, Besser M, Donohue S, Kamoga N, Stoops N, Williamson L & Visser R (2003) *An evaluation of the prevention of mother-to-child transmission (PMTCT) of HIV initiative in South Africa: Lessons and key recommendations*. Durban: Health Systems Trust.
11 Department of Health (2003) *Operational plan for comprehensive HIV and AIDS care, management and treatment for South Africa*. Pretoria: DoH.
12 South African National AIDS Council (2010) *The South African antiretroviral treatment guidelines 2010*. Pretoria: Department of Health.
13 Newell ML, Coovadia H, Cortina-Borja M, Rollins N, Gaillard P & Dabis F (2004) Mortality of infected and uninfected infants born to HIV-infected mothers in Africa: A pooled analysis. *The Lancet*, 364(9441): 1236-1243.
14 Southern African HIV Clinicians Society (2008) Guidance for antiretroviral therapy in HIV-infected infants less than 1 year of age. *Southern African Journal of HIV Medicine*, 9(4): 34-35;
World Health Organisation (2008) *Report of the WHO Technical Reference Group, Paediatric HIV/ART Care Guideline Group meeting, WHO headquarters, Geneva, Switzerland, 10 – 11 April 2008*. WHO: Geneva.
15 Department of Health (2005) *Guidelines for the management of HIV-infected children – 2005*. Pretoria: DoH.
16 Department of Health (2008) *National Comprehensive HIV and AIDS plan statistics*. Pretoria: DoH. [Unpublished]
17 Johnson LF & McLeod HD (2007) Steady growth in antiretroviral treatment provision by disease management and community treatment programmes. *South African Medical Journal*, 97(5): 358-335.