

# Child health: HIV/AIDS

Leigh Johnson (Centre for Actuarial Research, University of Cape Town)

Section 27 of the South African Constitution 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 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 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 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).

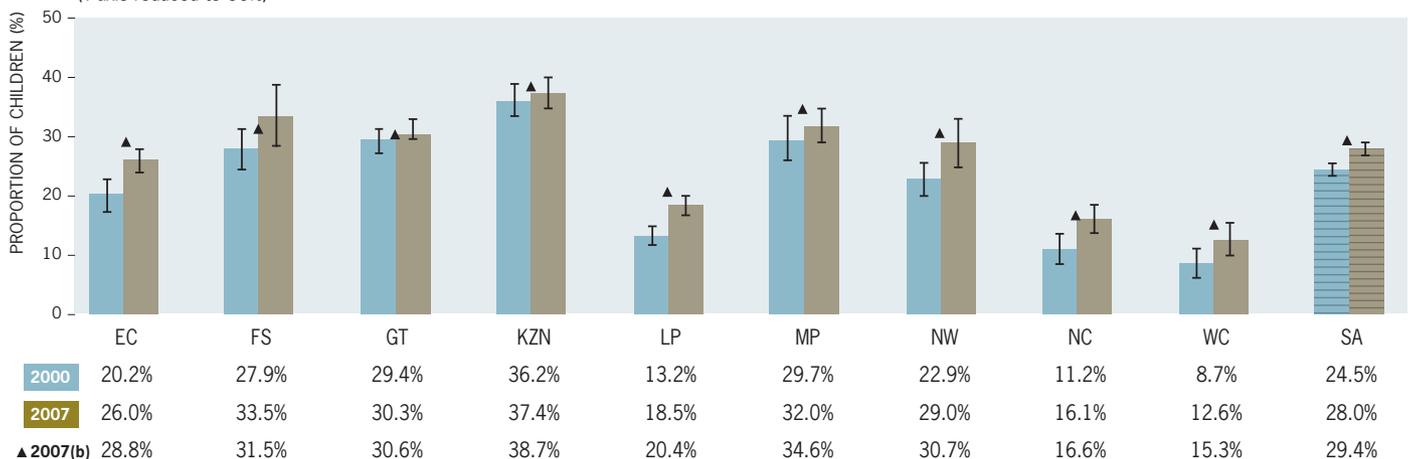
HIV prevalence in pregnant women increased steadily from 24.5% in 2000 to 30.2% in 2005. Although the 2006 and 2007 results of the National HIV and Syphilis Prevalence Survey suggest a slight decline in HIV prevalence in recent years, these results need to be interpreted with caution. The sampling protocol changed in 2006 to include a much larger number of clinics, and it is possible that some of the change that was observed between 2005 and 2006 was due to the change in the sampling rather than a change in the true prevalence of HIV in pregnant women. It has also been argued that the results of the 2007 survey were incorrectly weighted, and that the use of the 2006 weights would in fact have resulted in an increase in prevalence between 2006 and 2007 (Dorrington & Bourne 2008a). The alternative prevalence estimates calculated by Dorrington and Bourne (2008b), based on applying the 2006 weights to the 2007 data, are shown in table 5a, together with the 2007 estimates published by the Department of Health (2008). At the time of writing, agreement on the correct weighting method had not been reached.

There are substantial differences in HIV prevalence between South Africa’s provinces. KwaZulu-Natal has consistently had the highest prevalence of HIV, 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 in recent years around 17% and 20% respectively.

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 (Avert *et al* 2001; Williams *et al* 2006), and its prevalence differs substantially between South Africa’s provinces (Connolly *et al* 2008). Other factors such as 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 (Wilkinson 1999). Thus the surveys over-estimate HIV prevalence in pregnant women generally.

**Table 5a: HIV prevalence in pregnant women attending public antenatal clinics, 2000 & 2007**  
(Y-axis reduced to 50%)



**Sources:** 2000 & 2007: Department of Health (2001; 2002; 2003; 2004; 2005; 2006; 2007; 2008) *National HIV and Syphilis Prevalence Surveys 2002 – 2007*. Pretoria: DoH. 2007(b): Dorrington R & Bourne D (2008b) Re-estimated provincial HIV antenatal survey prevalence for 2007 and a reinterpretation of the national trend. *South African Medical Journal*, 98(12): 940-941.

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

This indicator is 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 2001/2002 to almost 70% in 2006/2007. In 2001, the Department of Health introduced two pilot PMTCT sites in each province, although there were many additional sites already providing treatment in the Western Cape and Gauteng provinces at this time (McCoy *et al* 2002). 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, and since that time, access to PMTCT has improved steadily in all provinces.

Access to PMTCT remains very variable between provinces. The Western Cape, which began its PMTCT programme in 1999, is about two to three years ahead of the national average in terms of its PMTCT roll-out. The Northern Cape, which appears to have got off to a slow start, has 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. At the other end of the spectrum, Mpumalanga has consistently had one of the lowest levels of PMTCT roll-out,

although its performance has improved substantially in the most recent survey.

The proportion of pregnant women who receive HIV testing and counselling is a measure of three factors: (1) the proportion of antenatal clinics that provide PMTCT services; (2) the proportion of women who are offered HIV testing at PMTCT facilities; and (3) 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 (Nkonki *et al* 2007). Early experience suggested that 25 – 50% of women would decline the offer to be tested for HIV (McCoy *et al* 2002; Mseleku *et al* 2005), 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 (Abdullah *et al* 2001; Doherty *et al* 2003; Coetzee *et al* 2005).

A number of different data sources have been used for different years, 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 5b:**  
**Proportion of booked women attending public antenatal clinics who receive HIV testing, 2001 – 2007**

Province	2001/2	2002/3	2003	2004	2005/6	2006/7
	%	%	%	%	%	%
Eastern Cape	1.7	6.7	–	–	–	75.3
Free State	4.6	15.8	31.1	33.7	40.4	66.9
Gauteng	–	20.0	17.6	39.0	47.4	60.6
KwaZulu-Natal	7.2	13.6	–	–	43.8	58.5
Limpopo	1.0	8.4	26.0	37.6	46.5	77.5
Mpumalanga	0.6	0.0	10.9	12.9	31.4	58.2
North West	2.2	30.7	–	34.7	47.9	74.3
Northern Cape	5.0	4.6	18.2	16.4	59.1	81.5
Western Cape	–	43.9	–	–	–	93.7
<b>South Africa</b>	<b>6.9</b>	<b>15.6</b>	<b>25.3</b>	<b>37.3</b>	<b>49.1</b>	<b>69.2</b>

### 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, Bekinska 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, Okorafa O, Moodley K & Doherty T (2006) *The District Health Barometer: 2005/6*. Durban: Health Systems Trust.
- Barron P, Day C & Monticelli F (2007) *The District Health Barometer: 2006/7*. Durban: Health Systems Trust.

Analysis by Leigh Johnson, Centre for Actuarial Research, UCT.

**Notes:** ① Some provinces supplied implausible figures; therefore these fields have been left empty. ② Different data surveys were done at different times. Therefore the reporting periods differ from year to year.

## 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. 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.

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 attending public health facilities with a CD4+ count  $<200/\mu\text{l}$ , or an AIDS-defining illness (Department of Health 2003). Largely as a result of this programme, the proportion of newly eligible adults initiating treatment has increased sharply, from 3.8% over the period from mid-2002 to mid-2003, to 34.0% over the period from mid-2006 to mid-2007. Although great progress has been made in making ART available in the public health sector, there is clearly still a large number of clinically eligible individuals who are not receiving treatment.

The results also suggest that there are substantial differences in access to ART across the provinces. The Western Cape Department of Health introduced antiretroviral treatment much more rapidly than the other provincial health departments, following the national Department of Health announcement in 2003, and over the period from mid-2006 to mid-2007 it is estimated that 56.5% of newly eligible adults started treatment. Over the same period, an even higher rate of coverage (74.4%) was achieved in the Northern Cape. Free State has had the lowest rate of antiretroviral coverage in recent years.

There are several barriers to the expansion of the ART programme. Most critically, there is a lack of infrastructure and a shortage of trained health workers in many public health facilities, which is making 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. Lastly, stigma and confusion regarding the effectiveness of ART are likely to result in individuals avoiding diagnosis and treatment.

**Table 5c: Proportion of adults newly eligible for ART who initiate treatment, 2002 – 2007**

Province	2002/3	2003/4	2004/5	2005/6	2006/7
	%	%	%	%	%
Eastern Cape	4.3	7.0	19.1	31.8	36.4
Free State	3.0	3.2	8.7	13.2	21.5
Gauteng	3.7	8.3	16.7	28.1	29.3
KwaZulu-Natal	4.0	4.6	15.3	30.1	36.3
Limpopo	3.0	3.8	11.7	26.9	33.2
Mpumalanga	3.1	4.1	7.9	18.5	33.3
North West	2.7	3.5	17.6	33.4	33.8
Northern Cape	4.0	6.6	28.9	43.2	74.4
Western Cape	9.0	33.1	43.0	57.6	56.5
<b>South Africa</b>	<b>3.8</b>	<b>6.6</b>	<b>16.1</b>	<b>28.9</b>	<b>34.0</b>

### Sources:

- Department of Health (2008) National Comprehensive HIV and AIDS Plan statistics. Unpublished.
- Dorrington RE, Johnson LF, Bradshaw D & Daniel T (2006) *The Demographic Impact of HIV/AIDS in South Africa. National and Provincial Indicators for 2006*. Cape Town: Centre for Actuarial Research (UCT), Medical Research Council and Actuarial Society of South Africa.

Analysis by Leigh Johnson, Centre for Actuarial Research, UCT.

**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. It is calculated as the number of children starting ART in a particular year, divided by the estimated number of new paediatric HIV infections over the same year.

The indicator follows a similar trend to the antiretroviral coverage in adults, with the proportion of newly infected children starting ART increasing from 2.1% in the period between mid-2002 and mid-2003, to 27.2% in the period from mid-2006 to mid-2007. The exceptionally high coverage in the Western Cape (88.7% over the 2006/2007 period) is a reflection of the success of the prevention of mother-to-child transmission (PMTCT) programme in that province, which has dramatically reduced the annual numbers of new HIV infections. Northern Cape, North West and Gauteng have also performed well, although there was an unexpected drop in the number of children enrolled on treatment in Gauteng between mid-2006 and mid-2007, when compared with the previous 12-month period.

Although the indicators of antiretroviral coverage suggest greater access to ART in adults when compared with 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 (World Health Organisation 2008; Southern African HIV Clinicians Society 2008). 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 up to now, however, do not recommend immediate initiation of ART in infancy (Department of Health 2005). 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 on treatment in the public health sector (Department of Health 2008) and estimates of the total number of individuals receiving treatment through disease management and non-governmental programmes (Johnson & McLeod 2007).

The denominator is calculated as the ASSA2003 estimate of the number of new HIV infections in children over the same period. The ASSA2003 estimates have been updated to take into account revised estimates of access to PMTCT services.

**Table 5d: Proportion of newly infected children who start ART, 2002 – 2007**

Province	2002/3	2003/4	2004/5	2005/6	2006/7
	%	%	%	%	%
Eastern Cape	1.2	2.3	7.7	13.1	19.0
Free State	1.4	1.6	5.5	14.9	–
Gauteng	2.1	6.9	14.8	31.1	28.3
KwaZulu-Natal	1.6	2.2	7.4	20.8	26.5
Limpopo	0.8	1.2	4.6	9.0	13.5
Mpumalanga	1.3	1.8	3.0	12.2	20.8
North West	1.3	1.6	6.9	18.9	36.0
Northern Cape	1.5	3.9	27.2	51.8	82.7
Western Cape	20.1	36.8	51.1	58.5	88.7
<b>South Africa</b>	<b>2.1</b>	<b>3.9</b>	<b>9.4</b>	<b>20.8</b>	<b>27.2</b>

### Sources:

- Department of Health (2008) National Comprehensive HIV and AIDS Plan statistics. Unpublished.
- Dorrington RE, Johnson LF, Bradshaw D & Daniel T (2006) *The Demographic Impact of HIV/AIDS in South Africa. National and Provincial Indicators for 2006*. Cape Town: Centre for Actuarial Research (UCT), Medical Research Council and Actuarial Society of South Africa.

Analysis by Leigh Johnson, Centre for Actuarial Research, UCT.

**Notes:** ① Reporting periods run from mid-year to mid-year. ② Updated figures were not reported by the Free State for the period mid-2006 to mid-2007.

## Additional sources for HIV/AIDS

- 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.
- Auvert B, Buve A, Ferry B, Carail 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.
- Coetzee D, Hilderbrand K, Boule 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.
- 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.
- *Constitution of the Republic of South Africa. Act 108 of 1996.*
- Department of Health (2008) National Comprehensive HIV and AIDS Plan statistics. Unpublished.
- Department of Health (2005) *Guidelines for the management of HIV-infected children – 2005*. Pretoria: DoH.
- Department of Health (2003) *Operational plan for comprehensive HIV and AIDS care, management and treatment for South Africa*. Pretoria: DoH.
- 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.
- Dorrington R & Bourne D (2008a) Has HIV prevalence peaked in South Africa? - Can the report on the latest antenatal survey be trusted to answer this question? *South African Medical Journal*, 98(10): 754-755.
- Dorrington R & Bourne D (2008b) Re-estimated provincial HIV antenatal survey prevalence for 2007 and a reinterpretation of the national trend. *South African Medical Journal*, 98(12): 940-941.
- 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.
- McCoy D, Besser M, Visser R & Doherty T (2002) *Interim findings on the national PMTCT pilot sites: lessons and recommendations*. Durban: Health Systems Trust.
- Mseleku M, Smith TH & Guidozi 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.
- 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.
- 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.
- Secretary General of the Organisation of the African Union (1990) *African Charter on the Rights and Welfare of the Child, OAU resolution 21.8/49*.
- 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.
- Wilkinson D (1999) HIV infection among pregnant women in the South African private medical sector. *AIDS*, 13 (13): 1783.
- 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.
- 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*.

