

KEY FINDINGS OF THE 2017 SOUTH AFRICAN ANTENATAL HIV SENTINEL SURVEY (ANCHSS)

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Executive summary

South Africa has conducted national antenatal sentinel HIV prevalence surveys since 1990, the 2017 survey being the 27th. Between 1990 and 2015, the survey focused primarily on estimating HIV prevalence trends over time among pregnant women attending antenatal care (ANC). In the 2017 survey, additional data on HIV incidence, knowledge of HIV status (1st 90), antiretroviral treatment (ART) coverage (2nd 90), viral suppression (3rd 90), syphilis screening coverage, and agreement between point-of-care HIV rapid testing and laboratory-based HIV testing were collected. In total, 32 716 women were enrolled in the 2017 antenatal survey. The overall HIV prevalence at national level was stable at 30.7% (95% CI: 30.1%–31.3%). Consistent with the previous 2015 survey, the highest HIV prevalence was in KwaZulu-Natal Province (41.1%, 95% CI: 39.9%–42.3%) followed by Mpumalanga Province (37.3%, 95% CI: 35.4%–39.2%). The lowest HIV prevalence was in Western Cape Province at 15.9% (95% CI: 14.2%–17.8%). Between 2011 and 2017, there was a consistent but moderate decline in HIV prevalence among first-ANC-visit attendees in the age groups 15–24 years (declined by 2% points) and 25–29 years (declined by 6% points). HIV testing uptake was high (over 99%) in the routine prevention of mother-to-child HIV transmission (PMTCT) testing programme. Knowledge of HIV-positive status (1st 90) among

women attending follow-up ANC visits was 96.7%. Of these, 98.2% were on ART (2nd 90). The ART adherence rate among follow-up ANC visit attendees was 98.7%, as self-reported from 3-day recall. Knowledge of HIV-positive status prior to the first ANC visit was low. More than a third (39.2%) of HIV-positive pregnant women nationally were unaware of their HIV-positive status prior to their first ANC visit. A larger proportion of adolescent pregnant women (61.1%) were unaware of their HIV-positive status prior to pregnancy compared with older (35 – 49 years) (24.5%) women. It is concluded that national HIV prevalence among pregnant women was stable at approximately 30% in 2017. The consistent decline in HIV prevalence observed among young women (15 – 24 years) is encouraging, as this population has traditionally been at increased risk of HIV acquisition. Knowledge of HIV status prior to first ANC visit was low, especially among young women (15 – 24 years), highlighting the gap in access to youth-friendly reproductive health services. The 1st and 2nd 90 targets have been reached among pregnant women across all provinces. The achievement of these targets in the PMTCT programme, despite the high proportion who were unaware of their HIV status prior to their first ANC visit, indicates how effective the PMTCT programme is at identifying HIV-positive pregnant women and enrolling them into treatment.

Introduction

HIV remains a major public health problem in South Africa. In 2017, 7.9 million people living with HIV (PLHIV), representing 20% of PLHIV globally, were living in South Africa.¹ As a member state of the United Nations, South Africa has made a commitment to ending the public health threat of HIV/AIDS by 2030, including reaching the 90-90-90 targets, which aim to ensure that 90% of PLHIV know their HIV status, that 90% of those who know their HIV-positive status receive antiretroviral therapy (ART), and viral suppression among 90% of those on ART by 2020.^{2,3} The fifth South African national household survey showed the tremendous progress the country has made towards these 90–90–90 targets.⁴ According to the 2017 survey, 85% of PLHIV nationally knew their HIV status, 71% of those who knew their status were receiving ART and 86% of those on ART were virally suppressed.⁴

Poor linkage to treatment and retention are the main barriers to reaching the 90-90-90 targets in South Africa.⁵ While new HIV testing technologies have made access to tests easier, active facilitation of linkage to care for those testing HIV-positive, and tracking/follow-up of those initiated on treatment, is sub-optimal.^{6,7} Progress towards the 90-90-90 targets also greatly varies by population group, being far slower among adolescent girls and young women (AGYW), men and other key populations such as men who have sex with men (MSM) and female sex workers (FSWs).^{4,8} Given this sub-population variation, it is important to track the progress of the epidemic in different population groups.

Since 1990, the South African antenatal sentinel survey has tracked HIV prevalence trends over time among pregnant women attending routine antenatal care (ANC) (annually until 2015, and biennially since then). In the early stage of the epidemic, when HIV infection and mortality rates were still low, HIV prevalence estimates from the antenatal survey provided reliable data for monitoring trends in prevalence as a proxy for incidence. As both the epidemic and the response to HIV expanded, additional indicators were needed to track the progress of the epidemic. In 2017, the survey gathered additional data on HIV incidence, knowledge of HIV status (1st 90), ART coverage (2nd 90), viral suppression (3rd 90), maternal syphilis screening coverage, and agreement between point-of-care HIV rapid testing and laboratory-based HIV testing.

The aim of this report is to present the key 2017 survey findings concerning HIV prevalence trends, knowledge of HIV status (first 90), ART coverage (the second 90) and syphilis screening coverage. A fuller report containing detailed discussion of the survey findings is presented elsewhere.⁹ Data on viral load suppression rate, laboratory confirmed treatment adherence, and incidence rate will be included in an instalment to be released in the last quarter of 2019.

Methods

The 2017 antenatal survey was cross-sectional and linked-anonymous. It involved HIV screening of selected eligible pregnant women aged 15–49 years attending ANC in public health facilities in South Africa. Between 1990 and 2014, the survey included first-ANC-visit attendees only, but

in the 2015 and 2017 surveys, follow-up visit attendees were included, so as to facilitate other programmatic or evaluation questions relevant for public health policies to be explored, e.g. the prevention of mother-to-child transmission (PMTCT) cascade.

Between 1st October and 15th November 2017, pregnant women attending ANC from 1 595 public health facilities, selected from 52 districts of South Africa, were enrolled into the survey. Health workers providing routine ANC services collected the data. The data collection procedures included: obtaining written informed consent, a brief interview, data abstraction from medical records and blood specimen collection from each consecutive, eligible (15-49 years old), consenting, pregnant woman attending an ANC visit during the survey period. Demographic and clinical information collected through interview included: education, marital status, race, gravidity, parity and ART adherence in the 3 days preceding the survey. Data on age, gestational age, ANC visit type, HIV testing history, latest HIV rapid test result and maternal syphilis screening coverage were extracted from medical records of enrolled women, while data on initiation of ART were extracted from medical records (if available) or self-reported by participants. A blood specimen was taken from each woman regardless of prior knowledge of HIV status or ART history, and tested for HIV infection. A detailed description of site selection criteria, sampling of women, and the data collection procedures is presented elsewhere.⁹

Specimen testing for HIV

Specimens were tested for the presence of HIV antibodies and antigens using a serial algorithm that consisted of two fourth-generation enzyme-immunoassay (IA) platforms (Figure 1). All specimens that were reactive on IA-1 were further tested using a confirmatory assay (IA-2). If specimens were reactive on IA-2 they were classified as HIV-positive. If IA-2 was non-reactive, the specimen was considered to have a “discrepant” HIV result.

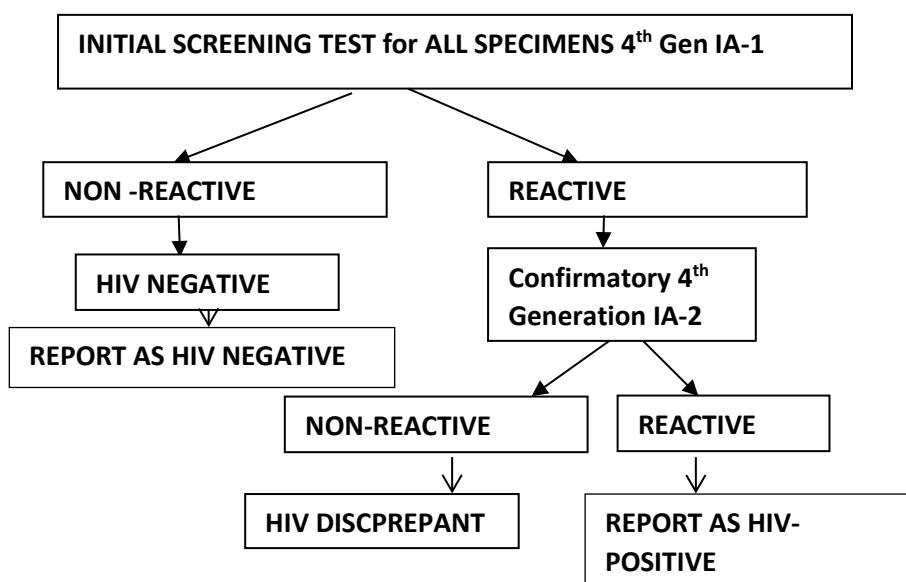


Figure 1. The laboratory HIV testing algorithm for the 2017 antenatal survey, South Africa.

Data analysis

Data were analysed using STATA 14 software (StataCorp. 2015. Stata Statistical Software: Release 14. College Station, TX: StataCorp LP). Analysis took into account the survey design (clustering within facilities, and stratification by district) and was weighted using the number of women of reproductive age (15–49 years) from the Statistics South Africa (Stats SA) 2017 mid-year population estimates.

The primary outcome of the survey was HIV prevalence, defined as the proportion of eligible pregnant women who participated in the survey and with a positive HIV IA test. HIV prevalence was compared across provinces and by age group using chi-square tests.

The HIV prevalence trend for 2011–2017 (excluding 2015) was analysed by 5-year age band and by province. This analysis was restricted to first-ANC-visit attendees, because the inclusion of follow-up visit attendees was expected to result in a slight increase in overall HIV prevalence, owing to new HIV infections acquired during pregnancy. The 2015 survey was excluded from this trend analysis as the data were not stratified by visit type. A separate analysis compared HIV prevalence among all pregnant women between 2015 and 2017 by province and district.

The PMTCT cascade analysis included uptake of HIV testing (among all pregnant women), knowledge of HIV-positive status and ART coverage (2nd 90). Knowledge of HIV-positive status and ART initiation prior to pregnancy was estimated in order to assess the coverage of the “test and treat” programme among pregnant women. The denominator for HIV-positive status knowledge prior to pregnancy was the number of IA positive individuals. Of those who knew their HIV-positive status prior to pregnancy, the proportion who were initiated on ART prior to pregnancy was reported.

Each analysis was done using complete observations, excluding individuals with missing values for the relevant variables. The non-response rate was low (<2%) for most variables. Two variables had >5% missing values, which were participant age (8.2%) and maternal syphilis screening (14.1%). For maternal syphilis screening, sensitivity analysis was applied by treating all missing values as “syphilis screening not done”, and including them in the denominator accordingly.

Results

In the 2017 antenatal survey, 36 128 participants were interviewed. Sixty-five (0.2%) were excluded as they were out of the age range (15–49 years), 1 687 participants were missing their HIV test results or interview data, and 1 595 (4.4%) had their blood specimens rejected (80.0% of specimen rejections were due to haemolysis). Of the remaining 32 781 specimens processed, 65 (0.2%) were excluded for discrepant or equivocal results, leaving 32 716 (90.6%) observations for inclusion in the analysis.

National HIV prevalence

At national level, HIV prevalence has been stable since 2004 at approximately 30%. Prevalence in 2017 was 30.7% (95% confidence interval [CI]: 30.1%–31.3%) (Figure 2).

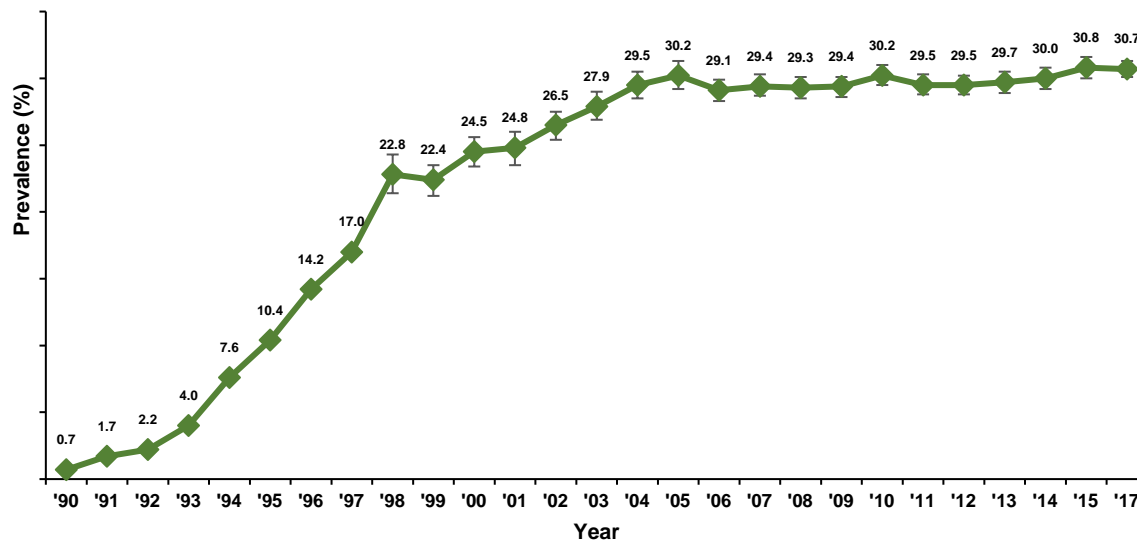
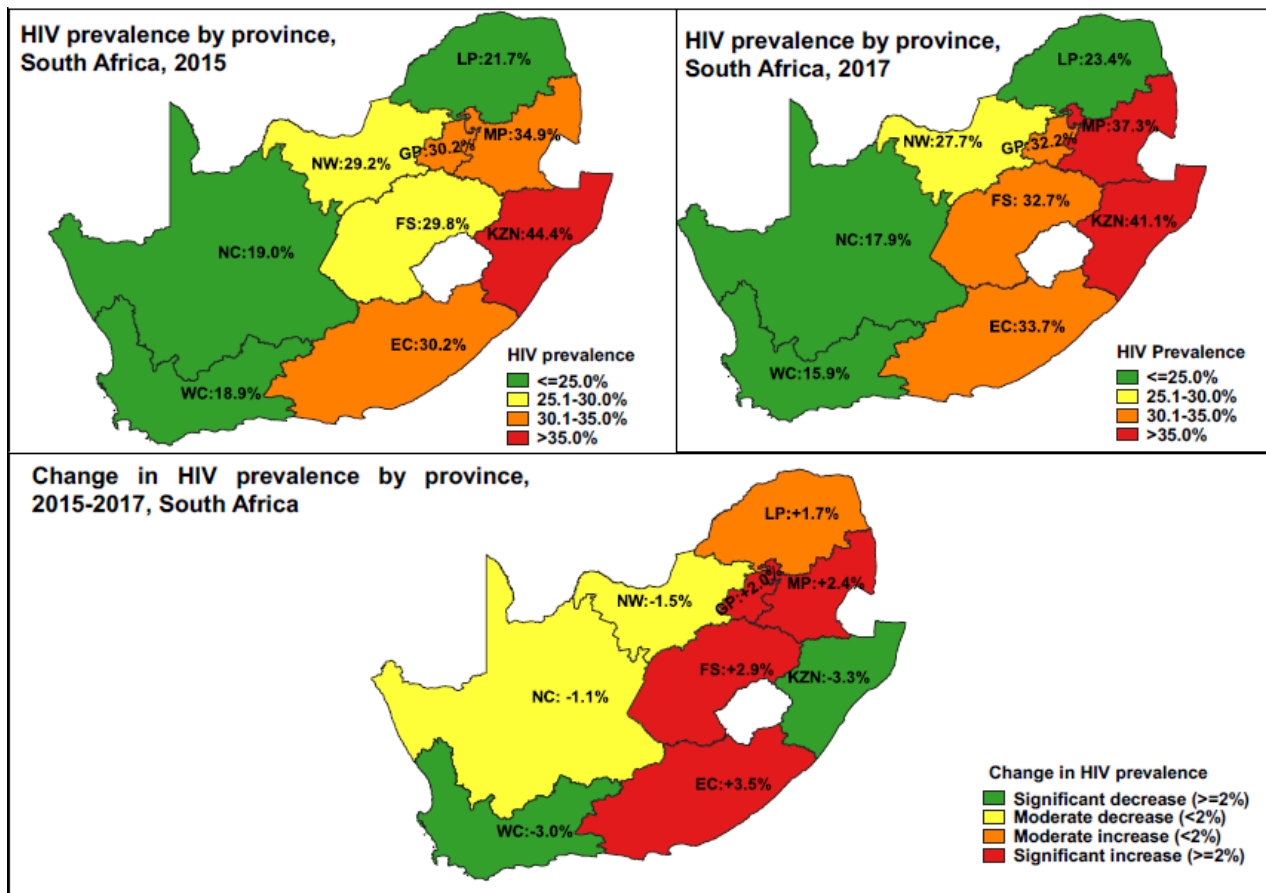


Figure 2. HIV prevalence by year at national level among all pregnant women, antenatal survey, South Africa. Prevalence among both first-ANC-visit attendees and follow-up ANC visit attendees.

The highest overall HIV prevalence was in KwaZulu-Natal (KZN) Province (41.1%) followed by Mpumalanga (MP) (37.3%) and Eastern Cape (EC) provinces (33.7%) (Figure 3). The lowest overall HIV prevalence by province were in Western Cape (WC) Province at 15.9% and Northern Cape (NC) Province (17.9%). The point estimates for overall prevalence between 2015 and 2017 increased in five provinces [EC, Free state (FS), Gauteng (GP), Limpopo (LP) and MP] and decreased in four provinces [KZN, NC, North West (NW) and WC].

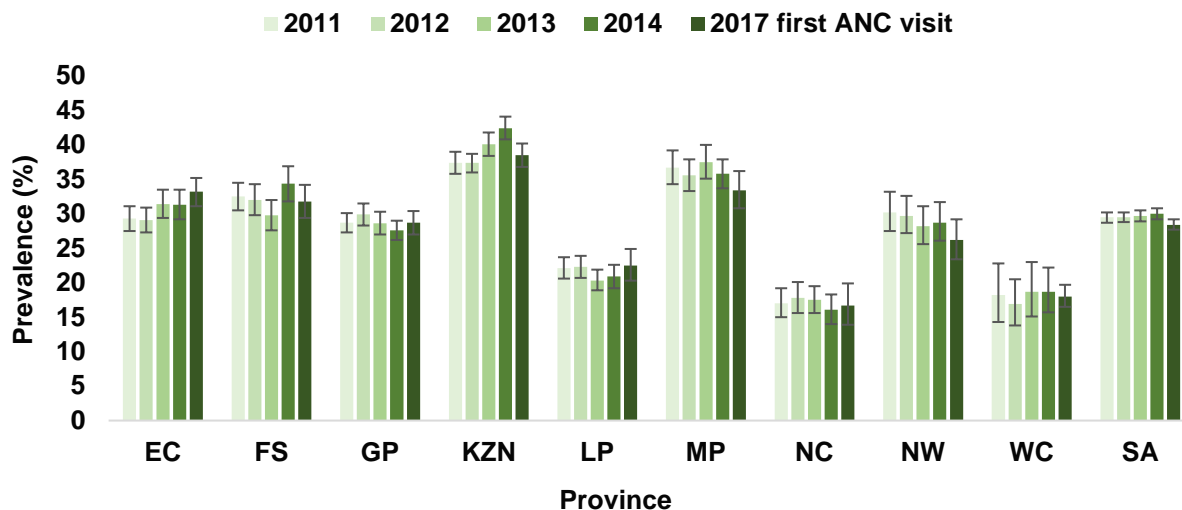


95% CI for 2017 prevalence: Eastern Cape (EC): 32.2–35.3; Free State (FS): 31.1–34.4; Gauteng (GP): 30.7–33.6; KwaZulu-Natal (KZN): 39.9–42.3; Limpopo (LP): 21.8–25.1; Mpumalanga (MP): 35.4–39.2; Northern Cape (NC): 16.0–20.1; North West (NW): 25.7–29.8; Western Cape (WC): 14.2–17.8

Figure 3. HIV prevalence by province and point percent change in HIV prevalence from 2015–2017, antenatal survey, South Africa.

HIV prevalence trends among women attending first-ANC-visit in their current pregnancy by province

There was no statistically significant upward or downward trend in HIV prevalence between 2011 and 2017 in all nine provinces (Figure 4). Note that the 2015 survey was excluded from this trend analysis as the data were not identified by visit type (i.e. as first and follow-up ANC visit). In KZN, after a consistent increase in HIV prevalence between 2012 and 2015, a significant decline was evident in 2017 - from 42.4% (95% CI: 40.8%–44.1%) in 2014 to 38.5% in 2017 (95% CI: 36.8%–40.2%) (P value from *chi-square test* < 0.01).



EC = Eastern Cape Province; FS = Free State Province; GP = Gauteng Province; KZN = KwaZulu-Natal Province; LP = Limpopo Province; MP = Mpumalanga Province; NC = Northern Cape Province; NW = North West Province; WC = Western Cape Province; SA = South Africa

Figure 4. HIV prevalence trends among first-ANC-visit attendees (2011–2017) by province and year, antenatal survey, South Africa.

HIV prevalence trends among women attending first-ANC-visit in their current pregnancy by age group

From 2011 to 2017, HIV prevalence among women attending first-ANC-visit in their current pregnancy consistently declined by 4.8, 2.0 and 6.0 percentage points in the age groups 20–24 years, 15–24 years and 25–29 years, respectively (P value from trend test < 0.01) (Figure 5).

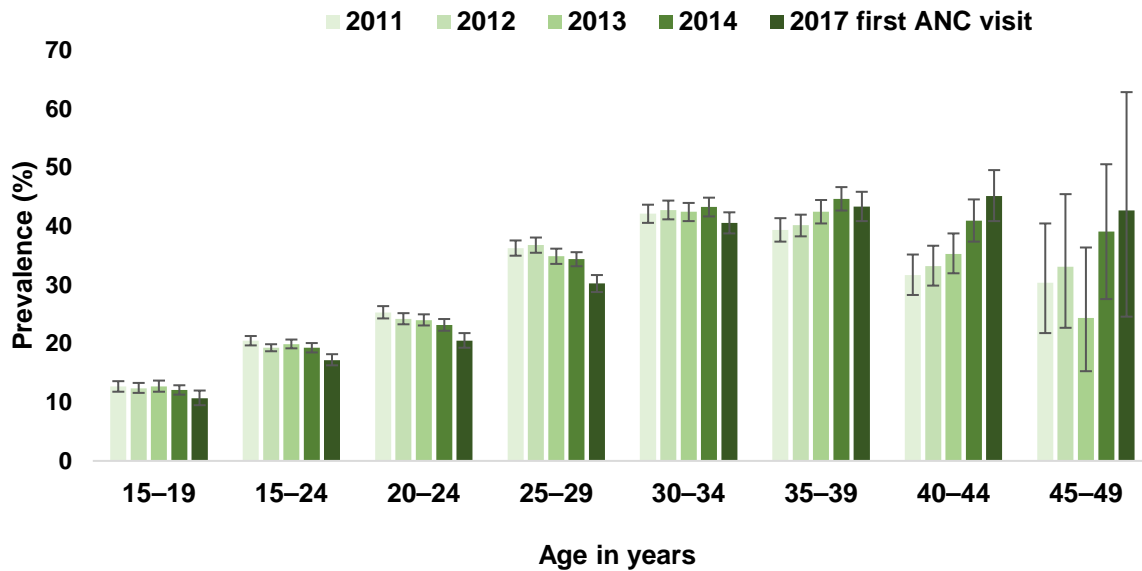


Figure 5. National HIV prevalence trends by age group by year among first-ANC-visit attendees, 2011–2017, antenatal survey, South Africa.

Prevention of mother-to-child HIV transmission (PMTCT) cascade

HIV testing uptake was high (99.7%) in the routine PMTCT HIV testing programme. Knowledge of HIV-positive status (1st 90) among women attending follow-up ANC visits was 96.7%. Of these, 98.2% were on ART (2nd 90). The ART adherence rate among follow-up ANC visit attendees receiving ART was 98.7%, as self-reported from 3-day recall (Figure 6).

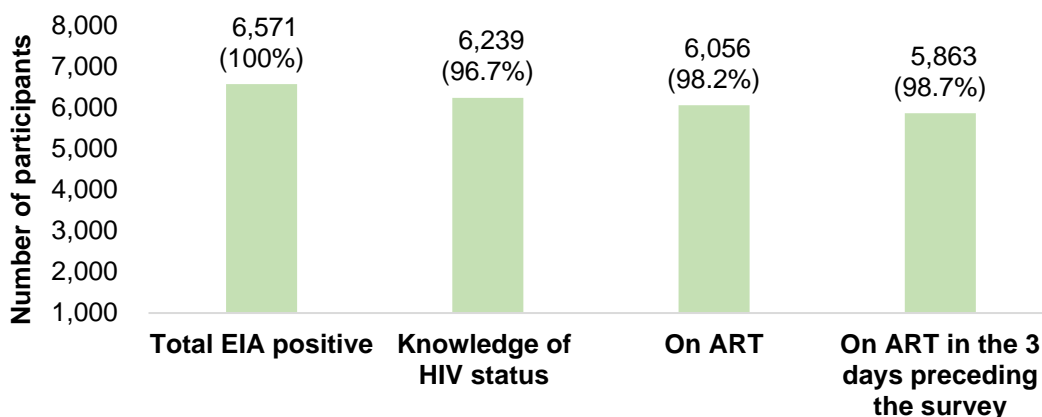
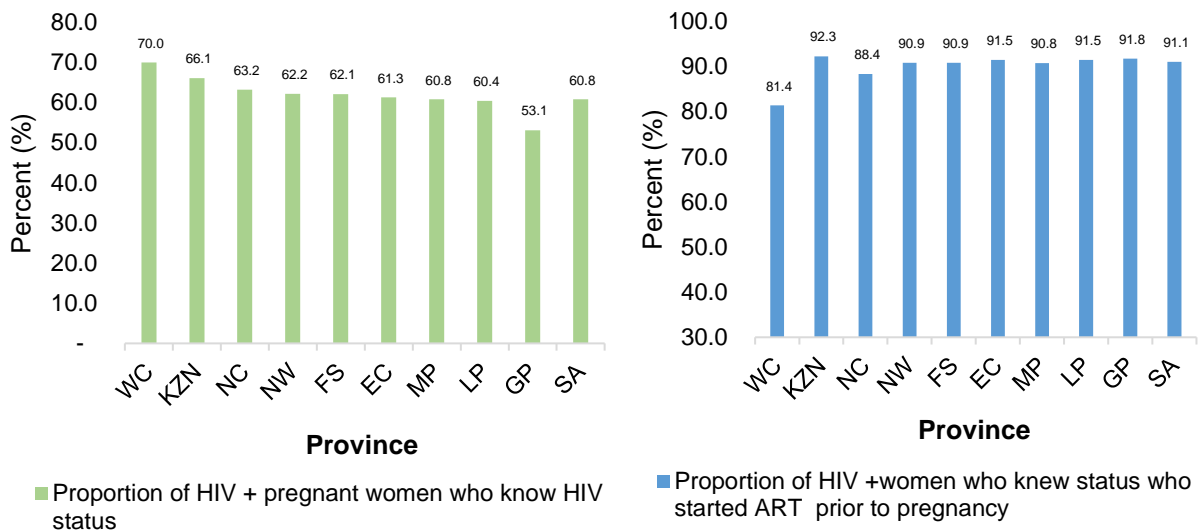


Figure 6. Prevention of mother-to-child HIV transmission (PMTCT) cascade among HIV-positive pregnant women attending follow-up ANC visit in the 2017 antenatal survey, South Africa.

Knowledge of HIV status and ART initiation prior to pregnancy

Overall, knowledge of HIV-positive status prior to first-ANC-visit was low. In this survey, 39.2% of HIV-positive pregnant women nationally were unaware of their HIV-positive status prior to their first-ANC-visit. About three-fifths (60.8%) of HIV-positive pregnant women were aware of their HIV status before pregnancy, of whom 91.1% reported starting ART before pregnancy. The highest knowledge of HIV status prior to pregnancy was in the Western Cape (70.0%) and KwaZulu-Natal (66.1%) provinces, whilst Gauteng Province had the lowest knowledge of HIV status (53.1%) (Figure 7).

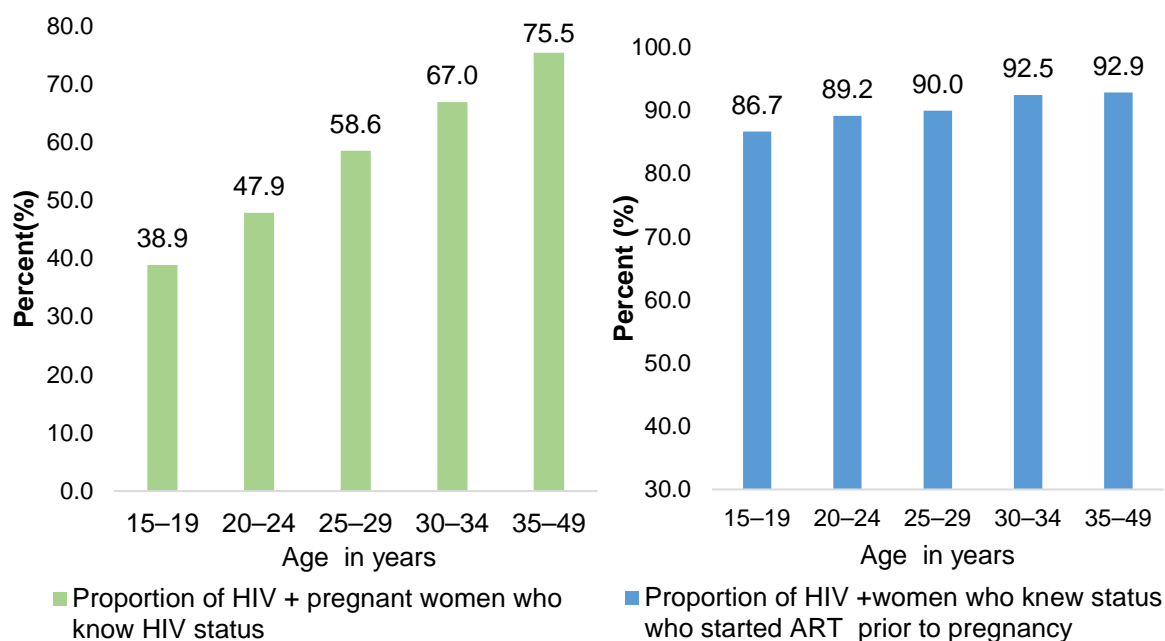


Denominator for knowledge of HIV-positive status prior to pregnancy was IA positives. Denominator for ART initiation prior to pregnancy was the number of HIV-positive women who were aware of their HIV-positive status prior to pregnancy. EC = Eastern Cape Province; FS = Free State Province; GP = Gauteng Province; KZN = KwaZulu-Natal Province; LP = Limpopo Province; MP = Mpumalanga Province; NC = Northern Cape Province; NW = North West Province; WC = Western Cape Province; SA = South Africa

Figure 7. Knowledge of HIV-positive status and ART initiation prior to pregnancy by province, 2017 antenatal survey, South Africa.

Knowledge of HIV status and ART initiation prior to pregnancy by age

Knowledge of HIV-positive status and ART initiation prior to the current pregnancy was higher in the older age group. Three-quarters (75.5%) of women in the age group 35–49 years, compared to just above a third (38.9%) of women in the age group 15–19 years, were aware of their HIV-positive status prior to first-ANC-visit in the current pregnancy (Figure 8).



Denominator for knowledge of HIV-positive status prior to pregnancy was IA positives. Denominator for ART initiation prior to pregnancy was the number of HIV-positive women who were aware of their HIV-positive status prior to pregnancy

Figure 8. Knowledge of HIV status and ART initiation prior to pregnancy by age group, 2017 antenatal survey, South Africa.

Maternal syphilis screening service coverage

Maternal syphilis screening coverage was 96.7% at national level among enrolled pregnant women, excluding 14.1% of participants for whom this data was missing (Figure 9).

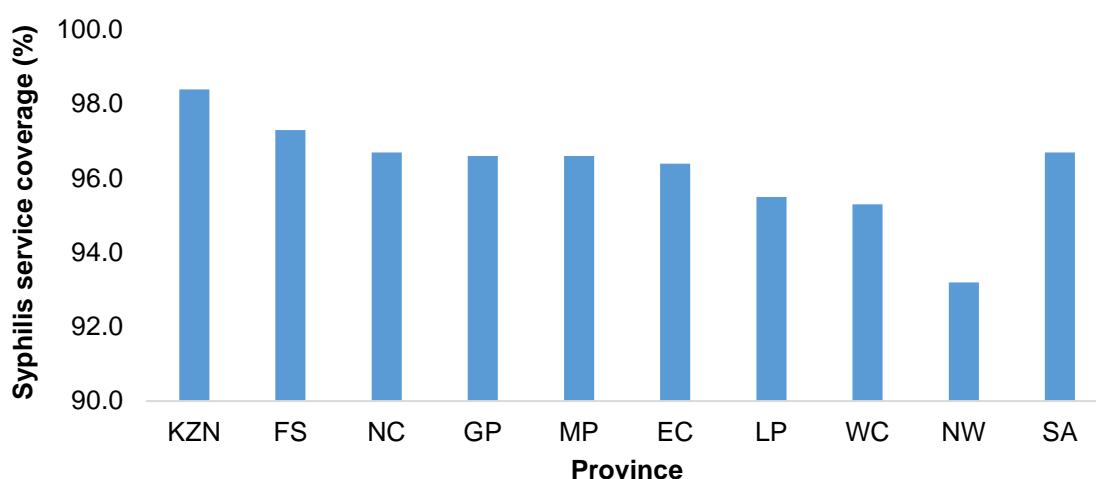


Figure 9. Maternal syphilis screening coverage among antenatal women at national level, 2017 antenatal survey, South Africa.

Conclusions and recommendations

Since 2004, HIV prevalence among pregnant women has stabilised at approximately 30% in South Africa. The consistent decline in HIV prevalence among young women (15–24 years) is encouraging, as it may reflect a positive impact of interventions targeting this group (e.g. “She Conquers” and “DREAMS” initiatives).^{10,11} The percentage of HIV-positive women who knew their HIV status prior to the current pregnancy was low, especially in the 15 to 24 year old group highlighting the gap in access to youth-friendly reproductive health services. Accessible and youth-friendly HIV testing services need to be scaled-up nationally, combined with effective HIV prevention interventions, to ensure those who test HIV-negative maintain their HIV-negative status and those who are positive receive early treatment. In addition, factors that delay access to testing and treatment services – such as poor service utilization, psychosocial and structural factors, and challenges associated with disclosure– should be addressed, to increase the coverage of early diagnosis and ART initiation.^{12,13}

The achievement of the first and second 90 targets in the PMTCT programme, despite a high proportion of respondents who were unaware of their HIV status prior to pregnancy, shows excellent performance by the PMTCT programme in identifying and enrolling HIV-positive pregnant women into treatment. These findings suggest that this critical program is an important contributor to achievement of HIV prevention and treatment in South Africa. Self-reported adherence rate to treatment was also high (98.7%); however this figure needs to be validated against laboratory-based treatment adherence data.

The maternal syphilis screening coverage (96.7%) exceeded the World Health Organization’s (WHO) target of >95% of pregnant women.¹⁴ This result however needs to be interpreted with caution, as syphilis-screening data were missing for 14.1% of participants. If this means that no screening took place in these cases, the syphilis screening coverage drops to 83.3%, well below the WHO target.

The antenatal survey was restricted to public facilities, which may limit the generalizability of its findings to the overall population, since the number of white and Indian people in particular, and others from high income groups who attend public health facilities, is typically small. The sample size of women attending first-ANC-visit was too small to detect significant prevalence trend changes over time in this group.

The cross-sectional design of the survey does not provide an opportunity to follow up on the ART status of pregnant women newly diagnosed as HIV-positive. For this reason, the PMTCT cascade was not measured among first-ANC-visit attendees. The self-reported data used to measure treatment adherence may be susceptible to social desirability bias. We aim to validate this data using laboratory-based measures of treatment adherence. The results from the laboratory data for antiretroviral (ARV) treatment adherence and other data – on viral load suppression rate, and incidence rate – will be presented in subsequent reports.

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Disclaimer

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