

Scale-Up and Continuation of Antiretroviral Therapy in South African Treatment Programs, 2005–2009

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Background: South Africa has the greatest burden of HIV-infection in the world with about 5.2 million HIV-infected adults. In 2003, the South African Government launched a comprehensive HIV and AIDS care treatment program supported by the United States in 2004 through the President’s Emergency Plan for AIDS Relief (PEPFAR).

Methods: To describe the scale-up and continuation of antiretroviral therapy in South African Government and PEPFAR-supported sites in South Africa, we conducted a retrospective analysis of routinely collected program reporting data, 2005–2009.

Results: From 2005 through 2009, the average rate of persons initiated on antiretroviral therapy in PEPFAR-supported South African Government treatment programs increased nearly four-fold from 6,327 a month in 2005–2006 to 24,622 a month in 2008–2009 resulting in an increase from 33,543 patients on continued treatment in April–June 2005 to 631,985 patients in July–September 2009. Of those 631,985 patients receiving treatment, 65% were women. Men were more likely to be lost to follow-up (9.2% vs. 7.8%, PR 1.18, 95% CI 1.17–1.19) and more likely to die (5.6% vs. 4.1%, PR 1.36, 95% CI 1.35–1.37) than women.

Conclusions: Scale-up and continuation of antiretroviral therapy in South Africa has been a remarkable medical accomplishment. Because more women receive and continue treatment, more efforts are needed to treat and retain men.

Key Words: HIV, treatment, South Africa, adherence, scale-up

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INTRODUCTION

South Africa has the world’s greatest burden of HIV infection with about 5.2 million HIV-infected adults. Up to 1.5 million of those require antiretroviral therapy.^{1,2} In 2005, it was estimated that fewer than 10% of South African

adults in need of antiretroviral therapy received treatment.¹ In November 2003, the South African Government announced a comprehensive HIV and AIDS care, management, and treatment program.³ In early 2004, the United States President’s Emergency Plan for AIDS Relief (PEPFAR) began collaborating with the South African Government to provide antiretroviral therapy in private, nongovernment and government-supported clinics through partnerships with various implementing organizations—private nonprofit entities, faith-based organizations, and universities.

Through a bilateral agreement with the South African Government, PEPFAR supports the delivery of antiretroviral treatment through the building and renovation of facilities, hiring of clinical staff, provider training, the provision and distribution of drugs, and quality assurance, monitoring, and evaluation activities. PEPFAR sets performance targets in key program areas such as prevention, treatment and care based on need, resources, and expert consensus. Although previous publications have reported the steady growth of antiretroviral treatment in South Africa and have estimated adult treatment coverage,^{4,5} the current rate of treatment scale-up using PEPFAR-collected data and whether the proportions of those who continue on treatment differ based on gender and facility-type have not been described. We determined the progress toward meeting the September 2009 PEPFAR-South Africa antiretroviral therapy target of 456,571 patients (including 45,657 children <15 years) in PEPFAR-supported South African Government facilities and estimated treatment continuation by facility type.

METHODS

Beginning in June 2005, PEPFAR-South Africa required its funded treatment partners (local and international nongovernmental organizations including universities and faith-based organizations) to submit quarterly data through a web-based system (MySQL, MySQL AB, Sweden). Partners report by facility the number of patients seen, initiated, or currently receiving antiretroviral therapy and not receiving antiretroviral therapy by category (lost, stopped, died, or unknown) by age and gender. (Some partners reported aggregate data, for example, all private general practitioner sites were aggregated at the provincial level). Continuation of therapy was defined as the proportion of those who currently receive antiretroviral therapy during the reporting period divided by the cumulative total of those who ever initiated therapy.

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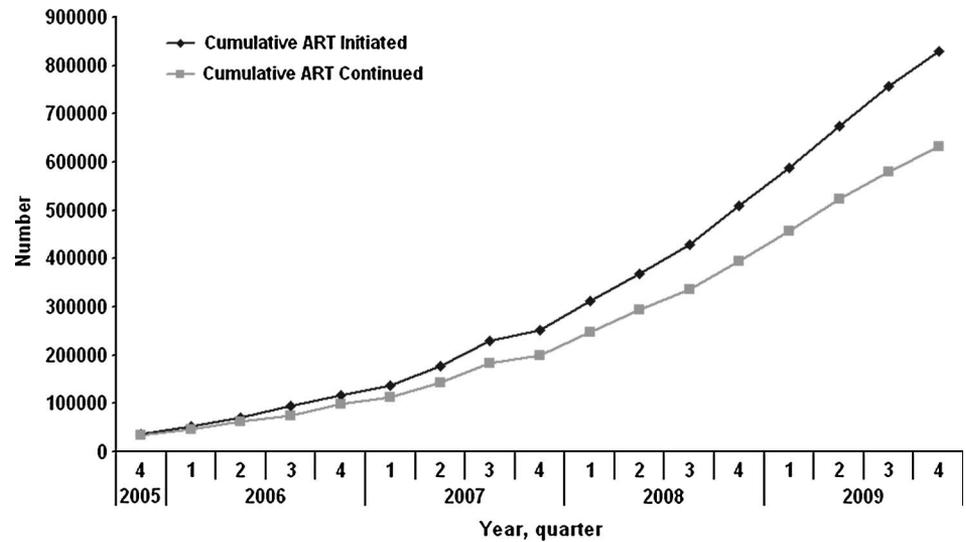


FIGURE 1. Initiation and continuation of antiretroviral therapy among Patients in South African Government and PEPFAR-supported Programs, South Africa, 2005–2009.

We described findings through September 2009. We calculated prevalence ratios (PRs) and 95% confidence intervals (CIs) to determine the association between clinic type, gender, and continuation on antiretroviral therapy. In accordance with United States regulations and international guidelines, the Centers for Disease Control and Prevention human subjects review process determined this activity to be nonresearch.

RESULTS

From June 2005 through September 2009, 829,640 patients were initiated on antiretroviral therapy through the South African government health system in collaboration with PEPFAR support. The average monthly rate of treatment initiation increased nearly 4-fold, from 6327 new patients per month in 2006–2007 to 24,622 new patients per month in 2008 and 2009 (Fig. 1).

The number of patients continuing to receive antiretroviral therapy increased from 33,543 patients in June 2005 to 631,985 in September 2009, a nearly 18-fold increase, and 38% above the US government target of 456,571. Among those 631,985 patients in September 2009 currently receiving treatment, 566,586 (89.7%) were aged 15 years or older and 61,545 (9.7%) were aged 0–14 years (missing patients had unknown age); 575,106 (91%) patients were treated in government sites, and 9% in nongovernmental and private facilities. Of adults, 65% (412,096) were female and 34% (216,035) male [3854 (<1%) unknown].

Overall, by the fourth quarter of 2009, the proportion of those who continued treatment among those who ever started antiretroviral therapy was 76.2%. Adults aged 15 years and older and women were more likely to be initiated on therapy than children aged 0–14 years and men (Fig. 2). By facility-type, continuation on antiretroviral therapy was 77% in government clinics, 73% in nongovernmental clinics, and 72% in private clinics. Compared with nongovernmental or private clinics, continuation was higher in government clinics (PR = 1.05, 95% CI: 1.04 to 1.06). By September 2009, of

those who ever initiated antiretroviral therapy, 8.4% transferred care, 8.3% were lost to follow-up, 4.6% had died, 1.4% stopped treatment, and 1.1% had unknown status. Of those lost to follow-up, 7.8% were female compared with 9.1% male (PR = 0.86, CI: 0.85 to 0.87) and 5.6% of males died compared with 4.1% of females (PR = 1.36, CI: 1.35 to 1.37).

DISCUSSION

The use of antiretroviral therapy in South Africa has greatly increased, well surpassing the US Government September 2009 treatment goal and meeting the treatment goal for children. Including all treatment programs (US Government-supported, South African-government supported, and private), the South African government estimated at the end of September 2009, there were 918,407 total patients receiving antiretroviral therapy, about 61% of the estimated need based on 2009 criteria.^{1,2} The scale-up of antiretroviral therapy from about 10% coverage in 2005 among those in need of treatment to more than 60% in 2009 has been a remarkable medical accomplishment.

Prior reports have documented that South African treatment programs have similar outcomes to those in high-income countries.^{6,7} A more recent report has documented the significant beneficial impact of treatment expansion for HIV infection on country-level mortality in multiple countries with longstanding programs.⁸ Further demographic data show the beneficial impact of the expanded antiretroviral treatment programs on trends in life expectancy in South Africa demonstrating a reversal from the nadir in 2005 (from 50.3 years in males and 52.6 years in females to 53.3 and 55.2 years, respectively, in 2010).⁹

The South African government aims to treat 80% of those in need by 2011.¹⁰ At the current estimate of about 25,000 newly treated patients a month or about 300,000 a year, in 2 years, an estimated 1,500,000 patients might be receiving treatment. Currently, the World Health Organization defines those who need treatment as HIV-infected individuals with

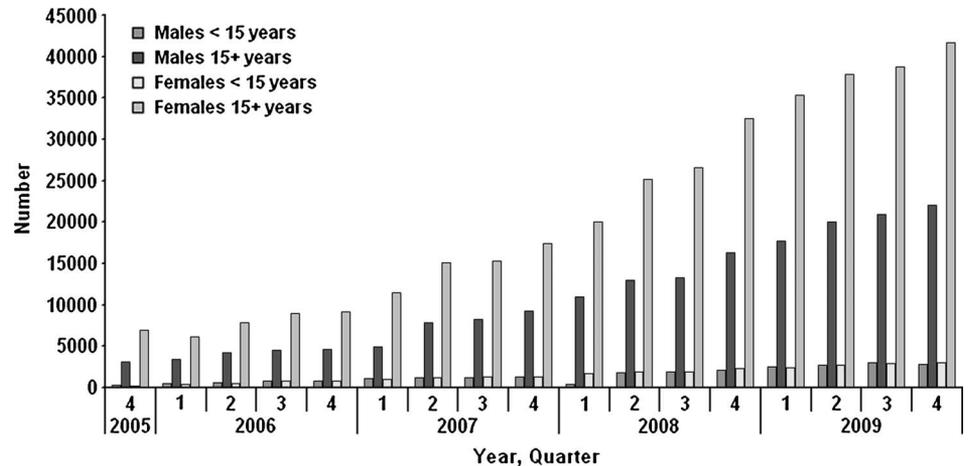


FIGURE 2. Number of new patients initiated on antiretroviral therapy in South African Government and PEP-FAR-supported Programs by age and gender, South Africa, 2005–2008.

a CD4 counts ≤ 350 cells per cubic millimeter.¹¹ With that newly revised definition of need for treatment, based on the continued high incidence of HIV infection (410,000 new cases annually) and continued HIV-associated mortality, there will be an estimated population of 5,600,000 adults with HIV infection 2011.⁹ Assuming 40% of those have a CD4 < 350 cells per cubic millimeter⁵ the true treatment need in South Africa might be as high as 2,240,000 adults. Thus, although the program is growing each year, more rapid acceleration in growth will be needed to attain the program goal of 80% in 2011.¹²

The proportion of those continuing on treatment was high and slightly greater in government than in private and nongovernmental clinics. The characteristics of facility types and patients in those facilities and how those factors contribute to continuation on treatment were unmeasured. Further evaluation is needed to understand how those characteristics might be related to differences in continuation on antiretroviral therapy and ultimately any differences in clinical outcomes.

Based on our analysis, men were less likely to be on therapy and more likely to be reported as lost-to follow-up or dead. Similar findings of an increased proportion of women receiving antiretroviral therapy in sub-Saharan Africa have been reported elsewhere.^{13–15} A population-based household survey in South African found that about 42% of those with HIV infection in South Africa were men.¹⁶ As scale-up continues, additional efforts are needed to attract and retain men in treatment.

The type of data available and the inability to disaggregate the data beyond gender and age limited our study. We could not control for confounding factors such as socioeconomic status, education, or severity of illness. In addition, individual-level data were not available, so patient outcomes could not be described including patient-specific rates of retention. Our measure of continuation was based on facility-level aggregate data and the quality of data could vary by facility. The characteristics of facilities beyond governmental, nongovernmental, or private, such as the size of the facility, ratio of staff-to-patients, urban versus rural setting, and average distance from patient's homes, were not available. The number of facilities providing antiretroviral therapy and the number of patients

receiving treatment were large supporting the robustness of the findings and generalizability across the country.

From 2005 through 2009, South Africa experienced substantial scale-up of antiretroviral therapy. Because of the continued high incidence of HIV infection, however, further acceleration of treatment scale-up must occur to enable South Africa to its goal of 80% of eligible HIV-infected persons on antiretroviral treatment by 2011. During our study period, more women than men initiated treatment and remained on antiretroviral therapy. Additional interventions to reach and engage more HIV-infected men in treatment programs are urgently needed. Major challenges remain ahead including the need to reduce the cost of drugs to expand access further and to eliminate the use of lower cost but toxic formulations like stavudine in first-line regimens. The necessity to support chronic medical care within a generally poorly functioning and overburdened public medical system will require continued financial investment and political will. Building a truly lasting South African-funded and wholly supported response to HIV/AIDS will take time and a necessary strategic shift in donor support from an emergency response to one of capacity building and sustainability.

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