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The cost of the plunge: the impact and cost of a cessation of PEPFAR-supported services in South Africa

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Background: Globally, shifts in United States foreign-aid policy have put HIV funding under duress. South Africa is unique in the region because its HIV program is largely domestically funded, although donor funds and partnerships support key components. We estimated the potential epidemiological impact of ceasing provision of services currently supported by PEPFAR and the costs and cost-effectiveness to the South African government (SAG) of potentially taking over these services.

Methods: We used a costed version of Thembisa, a South African HIV transmission model, to simulate four scenarios: a minimum scenario assuming intervention coverage reducing proportional to PEPFAR's funding share of specific activities in 2023; a maximum scenario assuming additional health system impacts; and sub-scenarios either with 3-year recovery (2029–2031) or no recovery to previous coverage. HIV program costs were estimated from the provider perspective (SAG) in 2024/25 US dollars.

Results: Over 2025–2028, discontinuing activities currently funded by PEPFAR in South Africa without replacement by SAG would result in 150 000–296 000 additional new HIV infections (29–56% increase) and 56 000–65 000 additional AIDS-related deaths (33–38%). Permanent discontinuation of currently PEPFAR-supported services over the next 20 years increases this to 1.1–2.1 million additional new HIV infections and 519 000–712 000 additional AIDS-related deaths. Sustaining these services would cost an additional $620 million to $1.4 billion between 2025 and 2028. Under a reduced budget, the most cost-effective interventions to preserve are ART and PrEP for key populations.

Conclusion: Unmanaged PEPFAR exit from South Africa threatens to undo a decade of progress unless services are taken over by other funders, including SAG.

Graphical abstract: http://links.lww.com/QAD/D608

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Keywords: antiretroviral treatment, budget impact, cost, cost-effectiveness, de-funding, HIV, HIV testing services, medical male circumcision, preexposure prophylaxis

Introduction

Funding of HIV programs in many low and middle-income countries globally is under duress as a result of a shift in United States (US) policy regarding foreign aid. South Africa, home to the world's largest number of people with HIV (PWH), is in a unique situation. Since the start of the public-sector HIV program in 2004, the majority has been funded from domestic resources, unlike most other high HIV prevalence countries where donor funds from the US President's Emergency Plan for AIDS Relief (PEPFAR) and the Global Fund enable most of the response. In 2023, the last year for which complete expenditure data are available, PEPFAR accounted for 21% of South Africa's total HIV expenditure of $1.86 billion and the Global Fund for another 3% [1]. However, this expenditure was unequally distributed across program areas; for example, while the South African government (SAG) funded 86% of antiretroviral treatment (ART) in 2023, PEPFAR funded 50% of prevention services, including substantially the voluntary male medical circumcision (VMMC) and preexposure prophylaxis (PrEP) programs. Additionally, PEPFAR supported substantial treatment retention activities by community-based healthcare workers, interventions for key populations, and health system strengthening, including investments and technical assistance in logistics, supply chain management, and data systems (see Supplementary Table 1, http://links.lww.com/QAD/D602).

In late January 2025, following the executive order mandating reviews of all US foreign assistance programs, we were tasked by the South African National Department of Health to calculate the epidemiological impact of a complete cessation of activities receiving PEPFAR support and the costs to the SAG of taking over services paid for by PEPFAR. Shortly thereafter, a further order halted all foreign aid or assistance to South Africa [2]. In late February, nearly 5800 out of 6300 US Agency for International Development (USAID) awards were cancelled, including most of those to South African organizations supporting the HIV program [3].

Materials and methods

Model

We used a costed version of Thembisa 4.7, a HIV transmission model representing the South African HIV epidemic that is used by SAG to prioritize HIV interventions and calculate HIV budget needs, to predict the impact of completely ceasing activities currently funded by PEPFAR on the South African HIV epidemic and the costs incurred if SAG were to take over these services [4]. For this, we calculated the incremental total costs of the public-sector HIV program between 2025 and 2044 compared to a baseline of the current HIV program (with a projected ART coverage of 80% of PWH by 2025).

The cost of the HIV program was estimated from the perspective of the provider, the South African public health system, in 2024 South African Rand, and converted to US dollar using the 2024 period average conversion rate of 18.33 ZAR = 1 USD [5]. Cost inputs used published data or our own analyses adjusted for current SAG prices, salaries and implementation models [6], even if replacing PEPFAR-funded staff and commodities. Program costs include both inpatient and outpatient costs as a function of ART status, thereby representing reductions or increases in inpatient admissions and costs in clients discontinuing ART, including costs due to tuberculosis (TB). Further details on the Thembisa model and assumptions are available under https://www.thembisa.org/content/downloadPage/Thembisa4_7report; details on an earlier version of the cost model are included in https://www.heroza.org/publications/south-african-hiv-investment-case/.

Scenarios

We calculated the impact of ceasing PEPFAR-funded activities as the additional HIV infections and AIDS-related deaths between 2025 and 2044 over a baseline in which 2024 HIV program coverage levels, including ART initiation rates, continued in perpetuity. To reflect uncertainty regarding the level and duration of reduced service coverage resulting from a cessation of PEPFAR funding, we examined four scenarios (Table 1). Our minimum scenario assumed that coverage by program area is reduced proportionally by the percentage that PEPFAR funded in 2023, without the SAG taking over current PEPFAR activities. Our maximum scenario assumed additional impacts on the health system, for example, through the overwhelming of existing clinics or systemic impacts of the discontinuation of PEPFAR's support for supply chain logistics and management systems assistance. Under both scenarios, we assumed that four years of no PEPFAR funding (2025–2028) would be followed by either a recovery of program funding over 2029–2031 to 2024 funding levels, or by no recovery reflecting lower program funding in perpetuity. All

Table 1. Assumed reductions in coverage by intervention and scenario from coverage levels in the 2024 HIV program.

	Minimum scenario	Maximum scenario
ART	14%[a]	28%[b]
HTS	6%	30%
VMMC	45%	70%
Oral PrEP to		
MSM	20%	70%
FSW	20%	70%
Other adults (15+)	0%	30%

ART, antiretroviral treatment; FSW, female sex workers; HTS, HIV testing services; MSM, gay and bisexual men and other MSM; PrEP, preexposure prophylaxis; VMMC, voluntary medical male circumcision.
[a]This means a resulting 86% of baseline ART coverage (82%), i.e., 71% of PWH being covered.
[b]This means a resulting 72% of baseline ART coverage, i.e., 60% of PWH being covered.

scenarios were informed by discussions with major stakeholders in the National Department of Health.

Finally, we estimated the cost-effectiveness of preserving each of the main four interventions hitherto supported by PEPFAR funding – ART (14% PEPFAR share), HIV testing services (HTS; 6%), oral PrEP to key populations (20%), and VMMC (45%) – under a reduced budget, by comparing each option to a baseline of a 21% defunded HIV program, representative of the minimum scenario. We assumed that condoms, postexposure prophylaxis, and inpatient care for PWH would continue to be provided at current levels in all scenarios, as these are fully funded by SAG at baseline.

Results

A complete cessation of PEPFAR-funded activities without take-over by SAG would increase new HIV infections in adults and children over the next 4 years (2025–2028) by 29% to 677 158 infections in the minimum scenario, and by 56% to 822 797 infections in the maximum scenario (Fig. 1a). Over 20 years (2025–2044), new infections in adults and children would increase by 314 017 (+16%) in the minimum scenario with recovery, by 1 096 602 (+54%) in the minimum scenario without recovery, and by 608 846 (+30%) and 2 076 386 (+103%) in the maximum scenario with and without recovery, respectively (Fig. 1a).

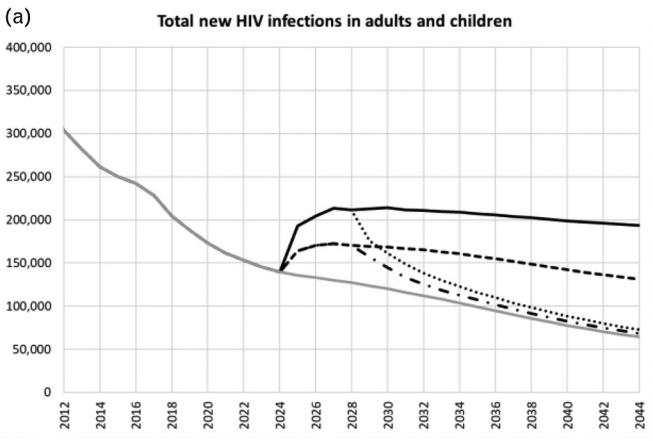
Over the next 4 years, AIDS-related deaths among adults would increase by 53 380 (+33%) in the minimum scenario, and by 61 092 (+38%) in the maximum scenario in adults (Fig. 1b), and by 2759 (+37%) and 3704 (+50%), respectively, in children under 15 years (Fig. 1b). Over the next 20 years, AIDS-related deaths in adults would increase by 122 519 (+16%) in the minimum scenario with recovery, 50 544 (+64%) in the minimum scenario without recovery, and by 170 739 (+22%) and 691 145 (+88%) in the maximum scenario with and without recovery. In children, deaths would increase by 6163 (25%) and 13 708 (+56%) in the in the minimum scenario with and without recovery, and by 9663 (+40%) and 21 738 (+89%) in the maximum scenario with and without recovery (Fig. 1a,b).

If the SAG does not fund the services and external funding does not resume ("No recovery" scenarios), total HIV program cost would be 1–3% higher between 2029 and 2044 due to a higher number of people requiring ART and HIV inpatient services, but total cost over the full 20 years, 2025–2044, would be between 1 and 14% lower due to lower coverage of ART (Fig. 1c). If the SAG took over funding of these services, the above-mentioned additional HIV infections and AIDS-related deaths could be averted at an estimated net additional cost over the 2025–2028 period of $622 million under the minimum scenarios (or $1424 million for the maximum scenarios).

In this situation of a reduced budget, the most cost-effective option across time periods and cost-effectiveness metrics was to allocate additional funds to preserve ART and PrEP among key populations, while reducing HTS by the 6% previous PEPFAR share and MMC coverage equivalent to PEPFAR's 45% contribution to their expenditure (Supplementary Table 2A, http://links.lww.com/QAD/D603 and 2B, http://links.lww.com/QAD/D604). When considering cost and outcomes over 5 years only (2025–2029), preserving ART was the most cost-effective based on both cost per death averted or cost per life-year saved, while sustaining full coverage of PrEP among key populations was the most cost-effective option based on cost per infection averted (Supplementary Table 2A, http://links.lww.com/QAD/D603). Over 20 years (2025–2044), retaining key population PrEP alone became cost-saving over a baseline of a fully defunded HIV program but remained the least effective at averting AIDS-related deaths (Supplementary Table 2B, http://links.lww.com/QAD/D604). The next cost-effective option, saving millions of life-years, was to maintain ART at current coverage. The option of keeping MMC alone was the least cost-effective option based on either cost per death averted or cost per life-year saved, although based on cost per infection averted, it was more cost-effective than preserving ART.

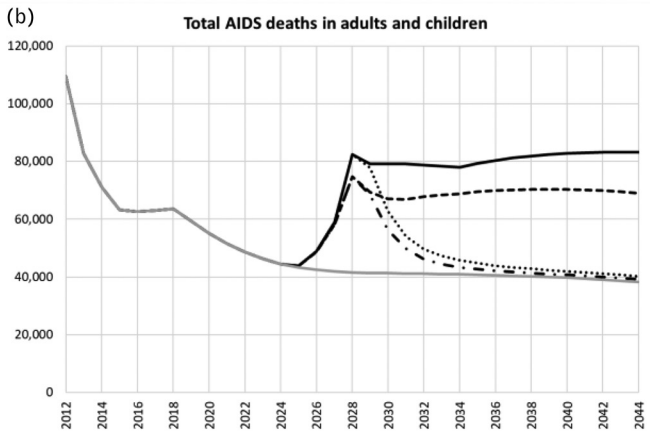
Discussion

Over the term of the current US administration, 2025–2028, the cessation of PEPFAR funding in South Africa without replacement of services by the SAG would increase expected new HIV infections in adults between 29 and 57% and AIDS-related deaths by 33–38%, returning to levels similar to those estimated in 2017 (for



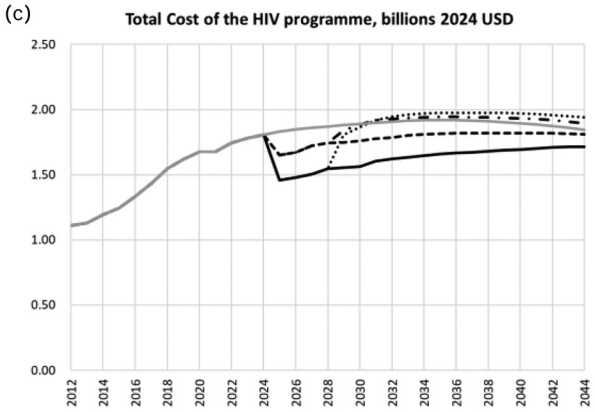
Additional new HIV infections (% change over baseline)

Scenario	Adults 2025-28	Adults 2029-44	Children 2025-28	Children 2029-44
Baseline	498,818	1,422,430	27,963	66,727
Minimum, No rec	143,274 (+29%)	905,120 (+64%)	7,103 (+25%)	41,104 (+62%)
Minimum, Rec	143,274 (+29%)	155,024 (+11%)	7,103 (+25%)	8,615 (+13%)
Maximum, No rec	282,254 (+57%)	1,703,017 (+120%)	13,763 (+49%)	77,352 (+116%)
Maximum, Rec	282,254 (+57%)	296,080 (+21%)	13,763 (+49%)	16,749 (+25%)



Additional AIDS deaths (% change over baseline)

Scenario	Adults 2025-28	Adults 2029-44	Children 2025-28	Children 2029-44
Baseline	162,037	627,656	7,434	16,856
Minimum, No rec	53,380 (+33%)	452,061 (+72%)	2,759 (37%)	10,949 (65%)
Minimum, Rec	53,380 (+33%)	69,139 (+11%)	2,759 (37%)	3,403 (20%)
Maximum, No rec	61,092 (+38%)	630,053 (+100%)	3,704 (50%)	18,034 (107%)
Maximum, Rec	61,092 (+38%)	109,647 (+17%)	3,704 (50%)	5,959 (35%)



Total cost in billions 2024/25 USD (% change over baseline)

Scenario	2025-28	2025-44
Baseline	7.4	37.8
Minimum, No rec	-0.62 (-8%)	-2.11 (-6%)
Minimum, Rec	-0.62 (-8%)	-0.22 (-1%)
Maximum, No rec	-1.42 (-19%)	-5.24 (-14%)
Maximum, Rec	-1.42 (-19%)	-0.64 (-2%)

Fig. 1. Impact of PEPFAR exit scenarios on (a) new HIV infections, (b) AIDS deaths, and (c) HIV program costs in 2024–2044.

HIV infections) and 2013 (for AIDS deaths) and thereby undoing more than a decade of progress toward ending AIDS as a public health threat. Both deaths and infections will increase more sharply in children under 15 years. If affected interventions do not return to current coverage levels after 2029, either through a return in outside funding or the national government stepping in, then over 20 years there would be 1–2 million more new HIV infections and 500 000–700 000 additional AIDS deaths compared to those currently projected. Substituting these services will require additional SAG funding of between $710 million and $1.5 billion between 2025 and 2028, with the majority of these funds required to replenish ART, including personnel and support services. Under a reduced budget, the most cost-effective option is to first allocate available additional domestic funds towards preserving current levels of ART.

Two previous studies have quantified the impact of discontinuing PEPFAR funding in South Africa. Gandhi *et al.* [7] estimated that a halving or complete withdrawal of PEPFAR funding would increase HIV infections by 286 000 and 565 000, respectively, over the next ten years. Ten Brink *et al.* analyzed the impact of PEPAR and European foreign assistance cuts on 26 countries with high HIV prevalence [8], estimating between 180 and 492 000 additional deaths in 2025–2030 for South Africa alone. Both estimate sets are similar to our results.

Our findings stand beside a number of limitations. Our assumptions regarding service coverage impact of discontinued PEPFAR support are based on the percentage of funding for each service provided by PEPFAR, which might not be a good proxy for the clients per service covered by PEPFAR, especially if

directly PEPFAR-supported services are more expensive per person covered than government-rendered services. This could overestimate both epidemiological and budget impact, despite assuming government prices and salaries for our cost calculations. Additionally, our minimum scenario was specifically designed to represent the additional cost to SAG to compensate for discontinued PEPFAR funding, and the epidemiological consequences of this transition failing. In reality, government will partially replace services, and actual salaries and prices might be closer to those paid by PEPFAR, so actual costs and outcomes likely fall between the two scenarios. There will also likely be further individual-level impacts of ART discontinuation such as increased disability and unemployment which an analysis from a societal perspective would have captured but for which recent data is unavailable. Lastly, PEPFAR-supported service discontinuation may differentially affect sub-population groups, with most key population clinics fully supported by PEPFAR. Except for PrEP, for which we stratified impacts by recipient population, our estimates applied to populations on average and might again overestimate or underestimate overall impact.

Conclusion

The exit of PEPFAR from South Africa, with no replacement funding, would have devastating impacts and threaten to undo a decade of progress toward ending AIDS as a public health threat. This can be avoided if PEPFAR-funded services are taken over swiftly and comprehensively by other funders, including SAG, international donors, and private sector companies. If additional budget is limited, maintaining current ART coverage should be prioritized.

Acknowledgements

G.M.R. conceived the analysis, reviewed results, and wrote the first draft. L.J. performed all modeling and contributed to the first draft. E.M. sourced data inputs and commented on scenarios. J.W.I.-E. commented on scenarios and reviewed results. L.F.J. developed the underlying model. All authors contributed to drafting the manuscript.

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Conflicts of interest

There are no conflicts of interest.

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