

IMPROVING THE ALLOCATIVE EFFICIENCY OF THE HIV RESPONSE ACROSS THE HIV TESTING AND TREATMENT CASCADE IN ZIMBABWE

Findings from an Optima HIV Modelling Analysis

In an effort to improve the efficiency of the HIV response in Zimbabwe, the World Bank in collaboration with the Government of Zimbabwe and the Burnet Institute conducted a mathematical modelling analysis using the Optima HIV mathematical model (<http://optimamodel.com/hiv>) to: 1) provide national and provincial HIV acquisition and transmission estimates and patterns from 2000 to 2017 and predict future trends to 2030 (Phase 1) and 2) identify opportunities for optimizing resource allocation across the HIV treatment cascade through different implementation options for HIV testing and treatment services (differentiated HIV care) (Phase 2). This policy brief provides a summary of the key findings and policy recommendations from this study. The full phase 1 and phase 2 reports can be accessed at [<http://hdl.handle.net/10986/33270>] and [<http://hdl.handle.net/10986/33271>].

RATIONALE

HIV remains the leading single cause of death and disability in Zimbabwe. It is estimated that in 2017 there were three new HIV infections per 1,000 people in the country. Moreover, HIV accounted for almost half (47%) of all years of life lost (YLL) among women of reproductive age in 2016.

In recent years, national levels of HIV prevalence have been declining for both males and females; however, there is substantial regional variation of HIV prevalence over time. Risk behaviors remain more predominant in the south-western provinces of Zimbabwe, where HIV prevalence is elevated. However, HIV service coverage is relatively uniform across Zimbabwe. With half of new HIV infections acquired and transmitted occurring among the general population aged 25 years and over, the HIV epidemic in Zimbabwe is projected to continue and to further age.

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The national government has set targets to achieve a 75% reduction of annual HIV infections by 2020 and a 90% reduction by 2030, from 2010 levels. However, economic instability in Zimbabwe may impact its future financing and progress in achieving these ambitious targets and on human development. Now more than ever, available resources will need to be invested cost-effectively and efficiently to maximize health gains and to improve progress in human development in the country.



STUDY OBJECTIVES

This study aims to highlight opportunities to maximise the impact of HIV financial resources in Zimbabwe by addressing the following questions:

1. What are the current and future projected patterns of HIV transmission and acquisition in Zimbabwe and can Zimbabwe (under current allocation efficiency and disease burden) achieve its national impact targets to reduce annual new HIV infections by 75% and 90% by 2020 and 2030, respectively, from the level in 2010?
2. Is the current HIV testing and treatment budget optimally allocated across HIV testing and treatment interventions and service delivery modalities?
3. What opportunities are there for implementation efficiency gains within HIV testing and treatment budgets, in terms of changing how interventions are delivered to different sub-groups of people (i.e., differentiated care) or saving on HIV-related commodity costs?
4. If more (or less) funding were available, how should funding across HIV testing and treatment interventions be prioritized?

KEY FINDINGS

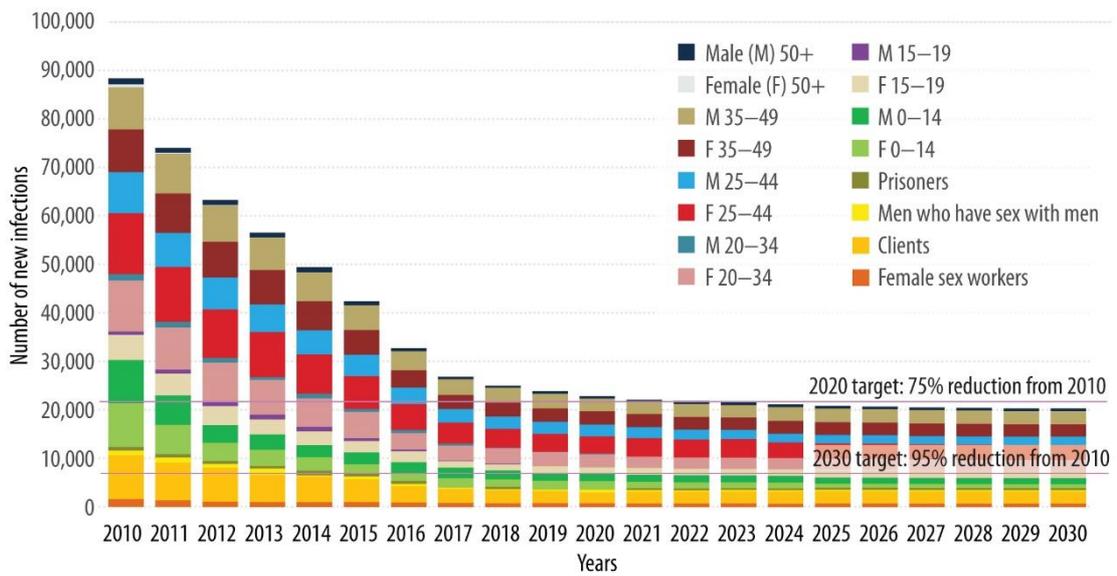
1. What are the current and future projected patterns HIV transmission and acquisition and will Zimbabwe reach its HIV incidence targets by 2020 and by 2030?

Findings from the Phase I report show that new HIV infections and HIV-related deaths have continued to decline both nationally and among key populations and that the HIV epidemic is projected to continue and age. The pattern of new HIV infections acquired in Zimbabwe represents a mix of several different groups and transmission settings. Most infections were estimated to have been acquired by the general population (versus key populations) and by females. An estimated 56% of new adult HIV infections were shown to have been acquired by females and 44% among males. Furthermore, 14% of new infections were estimated to have been acquired in children through vertical transmission and 20% among young people aged 15 to 24 years. Among key populations (14% of all infections), the largest share of HIV infections is attributed to female sex workers (FSW) and their clients. However, it was estimated that for all four key populations considered in the analysis, FSWs, clients of FSWs, men who have sex with men (MSM), and people who inject drugs (PWID) experience high rates of HIV incidence, above 1 in 100 person years. Optima HIV estimates also suggest that HIV incidence among females is particularly high in those aged 20–34 year and remains high among those aged 35–49 years. Among males, HIV incidence among those aged 15–24 years was estimated to be low and most new infections occurred among those aged 25–49 years.

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By maintaining the status quo (in terms of volume of HIV funding and allocation to specific programs across the HIV treatment cascade), it is estimated that by 2020 the target to reduce HIV incidence by 75% from 2010 will be met. However, under these conditions, the target to reduce incidence by 2030 over 2010 will not be achieved.

Figure 1 Number of new HIV infections projected (2010–30) under current conditions

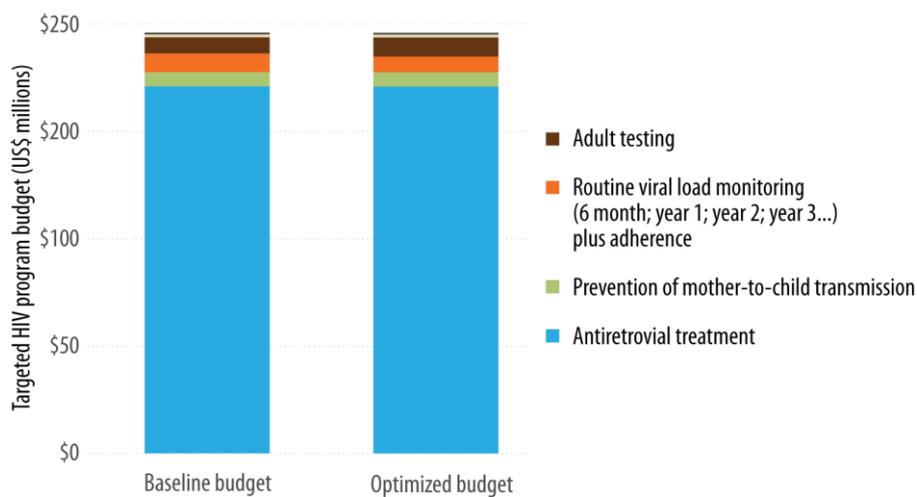


Source: Populated Optima HIV model, 2018.

2. Is Zimbabwe’s budget for HIV testing and treatment allocated efficiently?

It was determined that Zimbabwe’s HIV testing and treatment response is allocatively efficient, leaving little room for further allocative efficiency gains to be made (Figure 1). Since 96% of the most recently reported budget is being appropriately committed to ART, PMTCT, and other essential HIV services, additional opportunities for finding allocative efficiencies with the relatively small remaining budget (4%) would favour further scale-up of HIV testing to improve HIV diagnosis, which is the ‘weakest link’ in the HIV treatment cascade for Zimbabwe, particularly as testing yield is expected to decrease over time as it becomes more difficult to identify the last people who are undiagnosed.

Figure 2 Annual optimised budget allocations for targeted HIV programs for 2018 through to 2030



to 2030

Source: Populated Optima HIV model, 2018.

SO, WHAT CAN BE DONE? HOW CAN ZIMBABWE'S HIV RESPONSE ACHIEVE GREATER IMPACT, AND HOW CAN THE HIV TESTING, CARE AND TREATMENT RESPONSE BE MORE EFFICIENT?

3. What opportunities are there for implementation efficiency gains within the HIV testing and treatment budget by changing how interventions are delivered to different sub-populations (i.e., differentiated care) or reducing antiretroviral (ARV) drug cost?

Leveraging implementation efficiencies in the HIV response can lead to savings and to increased service coverage. Given the currently relatively high coverage across the HIV treatment cascade, alternative approaches, other than inter-program reallocations, need to be identified and prioritized. This analysis investigated the following options: optimization across adult HIV testing and ART refill modalities, switching to a lower cost Dolutegravir (DTG)-based ARV regimen, and implementing a less frequent viral load (VL) monitoring strategy for patients on stable ART.

By rolling-out these implementation efficiencies, it is estimated that an additional 15,000–18,000 new HIV infections could be averted by 2030 and \$2.7 million in costs could be saved each year. Any savings should be optimally reinvested in adult HIV testing and to increase coverage of routine viral load monitoring in line with recommendations from the optimization for increased budget (see next section).

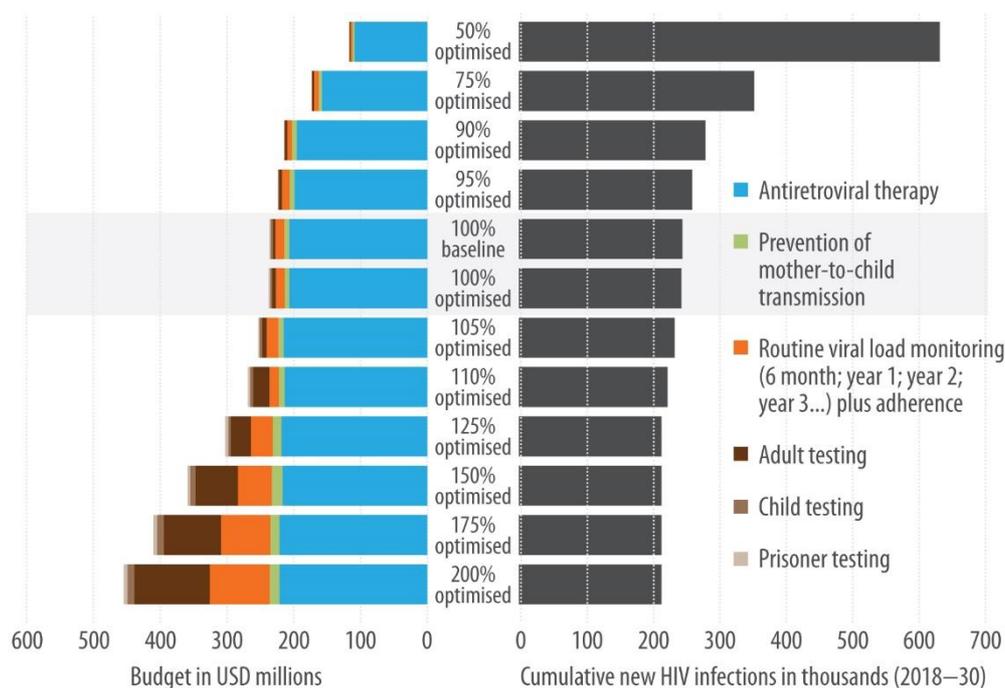
4. If more (or less) funding were available, how should funding to different HIV testing and treatment interventions be prioritized?

Reducing the HIV testing and treatment budget has a dramatic negative impact on the incidence of HIV (see Figure 2). For example, a 5% decrease in budget when optimised could result in 15,000 more new infections and 6,000 more HIV-related deaths than a fully funded optimised budget during the 2018 and 2030 period. Recommendations under decreased budget, suggest maintaining as many people on treatment as possible over prioritizing HIV testing and routine viral load monitoring. An optimised allocation 25% increase in budget prioritizes scale-up of HIV testing, ART, and routine viral load monitoring; however, this could also lead to an additional 28,000 new HIV infections being averted compared to an optimization of the most recently reported budget levels (100% budget). Under this condition, it is estimated that annual new HIV infections could be reduced by almost 90% (88.5%) by 2030 compared to 2010. As such, while increasing the budget may bring Zimbabwe closer to the 2030 90% incidence reduction target, it may still fall short of reaching the target. Furthermore, there will be decreasing returns relative to budget increases with the current mix of HIV testing and treatment interventions. Therefore, new HIV modalities or reduced marginal costs, as explored in this analysis, are needed.

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Figure 3 Annual optimised allocations with varying HIV budget and resulting estimated new HIV infections, 2018–30



Source: Populated Optima HIV model, 2018.

RECOMMENDATIONS

- While Zimbabwe’s HIV testing and treatment budget is allocatively efficient, additional impact could be achieved by **prioritizing additional investment for HIV testing over routine viral load monitoring and adherence.**
- **Consider increasing the HIV program budget by 25% and optimally allocating** to potentially achieve an 89% reduction of annual HIV new infections and a reduction of 11,000 more HIV-related deaths by 2030 compared to baseline.
- **Consider increasing new HIV service delivery modalities and other sources of implementation efficiencies.** Since the largest proportion of the HIV testing and treatment budget is allocated to ART (88%), increasing DTG-based regime and less frequent viral-load monitoring – biennial rather than annual – for those stable and suppressed on treatment and non-pregnant adults could be considered.
- **Additional interventions, including ARV-prophylaxis and non-ART HIV prevention interventions, and innovations to further reduce service delivery costs and to increase effectiveness** will be required if Zimbabwe is to reach its target to reduce incidence by 2030 over 2010. Particular prevention focus should be made on the populations at highest risk of acquiring and transmitting HIV infection, including adults aged 25–49 years and key populations. With diminishing marginal returns on investment of the current allocation (including with increased budget), **more personalized and preemptive HIV prevention should be considered.**

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