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Approaches to improving the efficiency of HIV programme investments

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INTRODUCTION

Improving the efficiency of investments in HIV control programmes is critical to the ongoing HIV response and reaching the target of ending the AIDS epidemic as a public health threat by 2030 (Sustainable Development Goal 3.3). Donor fatigue and the gradual decline in donor disbursements, including the decade-long trend of declining bilateral funding for HIV from donor governments other than the USA,[1] present a challenge to sustaining the current level of HIV spending.[2] Even with the existing available resources, the global burden of HIV exceeds the funding available to address it.[3] In light of the negative economic impacts of COVID-19, donor funding for HIV could be under further threat.[4]

While there is widespread agreement that there is a need for additional resources to adequately address HIV, evidence suggests that new resources raised from international and domestic sources are unlikely to be sufficient in the near future.[3] Scaling up HIV services to achieve national and global targets will, therefore, require that countries take steps to get 'more health for the money'—that is, to get the most out of available funding by improving the efficiency of the HIV response.[3]

In this article, we examine recent evidence from 2015 to 2020 on strategies to improve the efficiency of HIV programmes in low and middle-income settings (the three main types of efficiency are defined in box 1). Our search strategy is shown in online supplemental appendix 1. We aim to provide guidance to policymakers and HIV practitioners who are seeking to answer the following four questions related to HIV policy and investment decisions[5]

1. Value for money: How can policymakers get the most out of a fixed HIV budget?
2. Lowering unit costs: How can budgetary savings be achieved while delivering HIV services?
3. Delivery models for enhanced efficiency: Is one intervention superior to another in achieving the same goal for lower cost?
4. Tools to support action: How can use of cost-effectiveness help identify the most efficient interventions?

Summary box

⇒ Current annual funding levels are insufficient to tackle the global burden of HIV and it is unlikely that these levels will increase substantially in the near future.
⇒ Improving the efficiency of investments in HIV control programmes is, thus, critical to the ongoing HIV response.
⇒ While there is considerable variation between countries, the most promising areas for efficiency include measures to: (a) reallocate resources to the most effective interventions, including testing and antiretroviral therapy, (b) reduce the unit cost of delivering key services via better targeting, procurement and management practices, (c) use community-based treatment support and target models to deliver interventions to the most affected groups and (d) use cost-effective interventions such as demand creation incentives, HIV self-testing, and integration of services.

KEY STRATEGIES TO IMPROVE EFFICIENCY

Value for money: How can policymakers get the most out of a fixed HIV budget?

A recent World Bank analysis found that government expenditures and spending on health are expected to fall or remain at pre-COVID-19 pandemic levels in many low and lower-middle income countries.[6] In cases where budget expansion may not be feasible, countries need to make allocative decisions that yield the highest return in health outcomes. In the HIV literature, these allocative decisions are guided by information on the relative cost-effectiveness of different interventions, which is used in modelling studies to estimate an optimal allocation of

Box 1 Defining efficiency

In this article, we refer to three main types of efficiency[52 53]:

⇒ Allocative efficiency: maximising health outcomes using the least costly mix of health interventions; for HIV, allocative efficiency means optimal allocation of HIV funding to the combination of HIV interventions that will yield the greatest impact.

⇒ Technical efficiency: the maximum output is produced with the least input, that is, the least unit cost; two ways to improve technical efficiency are economies of scale and scope.

⇒ Programme efficiency: optimal use of management, procurement systems, human resources, and information to support effective and efficient service delivery.

resources and its impact on HIV outcomes (infections and AIDS deaths averted).

Optima (hiv.optimamodel.com), a dynamic population-based compartmental model, has been used to model optimisation of investments of available HIV resources.[7–9] Studies suggest that the optimal distribution of HIV resources depends on the available HIV budget and the characteristics of each country's epidemic, response and targets. However, scaling up focused testing and antiretroviral therapy (ART) was found to be an efficient use of resources in nearly all settings.[8 10] Efficiency gains can also be achieved by targeting HIV prevention programmes towards the geographical regions with the highest HIV incidence.[9]

The Goals model has also been widely used to examine choices for reallocation of constrained resources for HIV prevention. Recent investment cases in Tanzania and Namibia, for example, suggest that a reallocation of prevention spending to outreach and prevention packages for key populations such as female sex workers would significantly increase the number of infections averted.[11 12]

Lowering unit costs: How can budgetary savings be achieved while delivering HIV services?

Budgetary savings can be achieved by reducing service delivery costs for key HIV services that absorb the largest share of spending, including ART, HIV counselling and testing (HCT) and prevention of mother-to-child transmission (PMTCT). These savings can be reinvested in expanded service coverage, reallocated to more cost-effective HIV interventions or spent in other priority health areas.

Studies indicate that there are large variations in unit costs for HIV services, including ART service delivery, HCT and PMTCT across and within countries.[13–15] Most of these variations can be linked to service delivery characteristics and management practices in HIV healthcare. In a nationwide study in Nigeria, for example, a large proportion of the variations in costs for HCT and PMTCT facilities could be explained by scale—that is, facilities with the highest volume of clients saw the lowest costs.[14] But even after controlling for scale, variation in unit costs persisted due to economies of scope: facilities providing integrated HCT, PMTCT services and/or ART services were less costly. At the facility level, there were statistically significant associations between unit costs and management practices. External supervision, performance-based funding and government involvement in financial decisions were associated with higher costs, while community involvement and individual incentives were associated with lower costs.[14]

In Malawi, for HIV testing and treatment services, the highest costs were in facilities conducting the lowest daily number of tests (ie, variation due to scale).[15] ART service delivery unit costs in Kenya, Eswatini, Uganda, Zambia and Nigeria were also found to be inversely related to the number of patients served in a year.[13]

Budgetary savings can also be achieved by task shifting—asking less costly, decentralised health facilities, often managed by less expensive workers, to deliver the same HIV prevention and treatment services at lower costs.[16] Studies found cost savings from task shifting HIV prevention and care for a high-risk group (men who have sex with men) from government facilities to community-based organisations.[16 17] In low-resource settings, cost savings have been achieved by task shifting ART dispensing, especially to clinically stable patients (who are familiar with the routine of taking these drugs), from pharmacists to lower cost options. Such options include indirectly supervised pharmacist assistants, adherence clubs or other pharmacy-only refill programmes.[16] Task shifting was not found to negatively affect programme outcomes such as patient retention, viral load and mortality.[18]

A modelling study estimated that Tanzania could save over $US 50 million a year (around 10% of total HIV spending) simply by switching from more expensive to less costly drugs and better targeting HIV testing.[12] Better procurement strategies, such as the use of pooled procurement mechanisms, have resulted in lower unit costs for HIV commodities and equipment and generated savings.[19]

Delivery models for enhanced efficiency: Is one intervention superior to another in achieving the same goal for lower cost?

Studies have evaluated service delivery models to determine if one is superior to another by comparing cost per unit of output. These include studies comparing approaches such as community-level versus facility-based treatment support services; universal versus targeted HIV screening in pregnant women; and targeting of voluntary medical male circumcision (VMMC) by age and risk behaviour versus no targeting.

Community level versus facility-based treatment support services. Community-based treatment support models can provide care for more clients at the same cost as facility-based models.[20] Available data suggest that community-based ART services, even if they are equivalent but not superior to clinic-based programmes, may be more cost- effective from a societal perspective. Personnel, operational, utility and transportation costs for patients

are more likely to be lower for community-based ART provision.[21] This cost saving, along with the knowledge of increased effectiveness in retention and viral suppression, makes community-based ART more cost-effective and sustainable in the long run.[21 22]

The differentiated service delivery (DSD) model has also been found to be highly cost-effective in multiple studies. DSD is a client-centred approach that simplifies and adapts HIV services across the cascade of care in ways that both serve the preferences and expectations of groups of people living with HIV while reducing unnecessary burdens on the health system.[23] This model uses approaches such as simplification, task shifting and decentralisation to improve service delivery.[23 24] Studies show that differentiated care models can result in significant efficiency gains in terms of reduced costs and health workforce needs.[25–27] Care must be taken, however, to design such models to reduce or avoid overhead costs and redeploy health workers for other tasks once the frequency or number of patient visits is reduced.[26 27]

Targeting prevention versus offering it to all those eligible. Multiple modelling studies show that there are efficiency gains from targeting VMMC by age.[28 29] Efficiency gains from age targeting are not achieved from a 'one size fits all' approach, but rather because the optimal age range varies across settings as well as by goals. For example, in Mozambique, studies show that scaling up VMMC in men aged 20–29 years will have the most immediate impact on HIV incidence, but the greatest impact over a 15-year period would be from circumcising men aged 15–24 years in Mozambique's priority provinces.[28] On the other hand in Zimbabwe, large efficiency gains (measured as cost per infection averted) can be realised by targeting ages 15–34 years.[29]

Similarly, PrEP implementation can also be more cost-effective when targeted to those at substantial risk for HIV infection. A 2020 study on scaling-up PrEP in 13 countries showed that for most countries in the analysis, more than 50% of the HIV infections averted by oral PrEP in the scenarios examined could be obtained by rolling-out to female sex workers and serodiscordant couples alone.[30] Studies also showed that geographic prioritisation, prioritising women at substantial risk or those aged 22–29 years and prioritisation based on incidence (ie, when priority is given to those with an incidence rate of ≥3% per year) are all cost saving techniques and can result in efficiency gains.[30–32]

Other interventions. Studies have also shown that: universal screening in pregnant women is more cost-effective than a voluntary screening approach[33]; highly active ART has been found to be more cost-effective when initiated early in terms of CD4 counts and more cost-effective compared with other standard of care regimens[34]; lifelong ART for pregnant and breastfeeding women regardless of their CD4 count or HIV clinical stage (known as Option B+) is more cost-effective than ART given during pregnancy or breast feeding only (known as Option B).[35]

Tools to support action: How can use of cost-effectiveness help identify the most efficient interventions?

Cost-effectiveness analyses point to a number of innovations, including demand creation incentives for VMMC, HIV self-testing and integration of HIV and complementary services, that have been found to achieve good value for money.

Economic compensation, including cash and vouchers, to increase uptake of VMMC has been proven to be cost-effective in a number of randomised controlled trials.[36–38] Studies show that it may be most cost-effective to introduce financial incentives in settings with an already high prevalence of VMMC to focus on men who would not have accessed the services otherwise.[39]

There is strong evidence of the effectiveness of community-based self-testing for HIV (HIVST) on increased testing coverage. HIVST also has the potential to be cost-effective, contingent on: (a) delivery to high burden settings with low coverage of HIV testing; (b) reductions in delivery costs through less resource intensive implementation and cuts in HIVST unit costs and (c) improvements in linkage to prevention among HIV-negative individuals.[40] HIVST has been shown to increase testing yield and improve health system efficiency by allowing the triaging of those without HIV directly to prevention services and freeing up health workers' time.[41 42]

Integration of HIV and infectious and non-communicable disease screening has been found to be cost-effective in multiple settings.[43–46] Integration can reduce the total time required to provide care and is less costly than non-integrated screening due to reduced overhead costs, reduced patient transport costs and the time saved by the patient and provider. In studies reporting that the costs of integration were higher than the costs of standalone care, the overall integrated population-based screening was still likely to be cost-effective according to the commonly used 'less than GDP per capita per DALY averted' threshold.

Apart from screening, integration of HIV and family planning and sexual and reproductive health (SRH) interventions targeting sex workers were also found to be highly cost-effective.[47–51] The most cost-effective models for HIV and SRH combined interventions that were biomedical (eg, STI testing and treatment, HIV vaccination, female condoms), structural (eg, legal changes, microfinance, income-generating activities) and behavioural (eg, voucher incentives, voluntary counselling and testing) within existing health programmes.[47] The main drivers of cost-effectiveness included HIV incidence and prevalence among sex workers, number of sexual partners of sex workers and commodity costs.[47]

POLICY IMPLICATIONS

Our review of the literature suggests that there are several ways to raise efficiency in HIV programming– through reallocating resources, lowering unit costs, implementing improved delivery models and focusing on cost-effective

interventions. Many of the recent studies cited here have applied these approaches. The use of optimisation tools such as Goals and Optima has also assisted countries in simulating different efficiency strategies before implementation by estimating expected efficiency gains, savings and impact on the epidemic.

Nevertheless, there are still opportunities for further improvement in the analytical tools and in their use by global and national decision-makers. Among the steps that can be taken include: (1) more widely disseminating the tools for optimisation modelling and training of national teams in their use, (2) creating and maintaining more complete databases on unit costs and expenditures for key HIV interventions, (3) directing more global and domestic funding to studies on costs and cost-effectiveness in HIV and (4) linking findings from these studies to decision-making processes in national ministries of health and global programmes such as PEPFAR and the Global Fund. This 'optimisation' of ongoing efforts to improve efficiency in HIV spending can have big payoffs for countries and institutions committed to achieving the 2030 goals for HIV/AIDS.

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