



Global Public Health

An International Journal for Research, Policy and Practice

ISSN: (Print) (Online) Journal homepage: <https://www.tandfonline.com/loi/rgph20>

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To cite this article: Jenny Renju , Janet Seeley , Mosa Moshabela & Alison Wringe (2021) Understanding the health systems impacts of Universal Test and Treat in sub-Saharan Africa: The Shape UTT study, *Global Public Health*, 16:2, 161-166, DOI: [10.1080/17441692.2020.1861317](https://doi.org/10.1080/17441692.2020.1861317)

To link to this article: <https://doi.org/10.1080/17441692.2020.1861317>



Published online: 16 Dec 2020.



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EDITORIAL



Understanding the health systems impacts of Universal Test and Treat in sub-Saharan Africa: The Shape UTT study

ARTICLE HISTORY Received 3 September 2020; Accepted 5 October 2020

KEYWORDS HIV; Universal test and treat; sub-Saharan Africa; antiretroviral therapy; health systems

Sub-Saharan Africa has the highest burden of HIV globally, with 54% of the world's people living with HIV (PLHIV) living in this region. By 2018 in East and Southern Africa there were 20.6 million adults and children living with HIV, 800,000 new HIV infections and 310,000 AIDS-related deaths (UNAIDS, 2019). Whilst there has been a decline in new HIV infections and AIDS-related deaths in recent years, progress is fragile, and varies considerably across the region.

Across the region, approximately 85% of PLHIV know their status. Of those who know their status, 67% are on antiretroviral therapy (ART). Among PLHIV on ART, approximately 58% are virally suppressed. Ensuring that PLHIV who learn their status are linked to care and sustain HIV treatment represent major challenges that prohibit the achievement of the 95–95–95 targets which have been agreed upon as the strategy to 'fast-track' ending the AIDS epidemic by 2030 (UNAIDS, 2015b).

In June 2016, the member states of the United Nations (UN) adopted a political declaration to end the AIDS epidemic by 2030 (UNAIDS, 2016). The move was spurred by the findings from epidemiological and modelling studies that showed that high levels of HIV testing followed by rapid initiation of ART for all PLHIV brought individual health benefits and reduced HIV transmission risks (Cori et al., 2014; Floyd et al., 2018), a strategy referred to as 'Universal Test and Treat (UTT)'. The evidence led the World Health Organization (WHO) to recommend ART initiation regardless of immunological status for all PLHIV (World Health Organization, 2015), a policy which many African countries, including the United Republic of Tanzania, Malawi and South Africa, adopted in 2016.

Both the UN declaration and WHO guidance acknowledged concerns about the feasibility of UTT within overburdened, weak health systems that are characterised by insufficient human resources, limited laboratory capacity and finite budgets (UNAIDS, 2016; World Health Organisation, 2016). Additionally, many African HIV programmes were already experiencing sub-optimal HIV testing and retention rates (UNAIDS, 2015a), and the increased demands on health systems through additional patient loads was anticipated to potentially lead to drug stock-outs, drug resistance, inadequate patient preparation and poor adherence (Kulkarni et al., 2013; UNAIDS, 2015a). Given the rapid implementation of UTT, there was little time to assess the health systems preparedness for the roll-out of this ambitious and comprehensive strategy in most settings, resulting in limited understanding as to how UTT implementation would affect health systems. In particular, there was a lack of evidence on how increased volumes of patients could be absorbed into existing services whilst maintaining guideline-based, high-quality care for HIV patients.

In a bold policy move in 2011, the development of Option B+ (test and treat in pregnant and breastfeeding women) in Malawi, provides an opportunity to learn important implementation lessons for the widespread roll out of Universal test and treat (UTT) for the whole population. In addition to reducing treatment interruptions among women of reproductive age, Option B+ was developed to overcome health systems challenges that had plagued programmes for prevention of mother-to-child transmission (PMTCT) over the past decade. Option B+ promoted protocol simplification, task-shifting and service decentralisation in order to achieve higher PMTCT

coverage, and in turn accelerate progress towards eliminating perinatal infections (Kalua et al., 2017). Option B+ implementation afforded a rare opportunity to investigate how the policy implementation process impacted health systems, with a view to understanding the subsequent consequences once the policy was further expanded to the general population.

In this context, we undertook a multi-country health systems study to assess the policy implementation and health systems impacts of Option B+ and UTT for HIV in Malawi, Tanzania and South Africa, known as the ‘SHAPE UTT’ (Strengthening Health systems for the Application of Policy to Enable Universal Test and Treat) study. The three countries were selected to represent early, mid-term and late adopters of Option B+ policies (in 2011, 2013 and 2015 respectively). The SHAPE UTT study built on our previous work that highlighted gaps between WHO guidance, national HIV policies and health facility provision of HIV services that varied across the three countries, with consequences for health systems and patient outcomes (Ambia et al., 2017; Cawley et al., 2017; Dasgupta et al., 2016; Jones et al., 2019). The overall aim of the SHAPE UTT study was to address a critical evidence gap by ascertaining health systems impacts of delivering UTT.

The research was multidisciplinary, drawing on methods and theories from economics, health policy, sociology and epidemiology, and was conducted using a longitudinal mixed methods design. HIV policy and health facility survey data were collected at three time points in each setting to understand evolution in HIV policy implementation, with key informant interviews to elicit the contribution of process, context and actors, and in-depth interviews with health service users and providers to explore experiences of HIV service delivery. We collected economic costing data to understand the cost implications of delivering Option B+ and Test and Treat. We also used health facility survey data to compare health systems impacts over time and across settings using standardised indicators.

In this special issue, we present the findings from the SHAPE UTT study which help to address a critical evidence gap by describing health systems preparedness and responsiveness to the scale up of UTT. The papers provide an analytical spotlight on the multiple tensions that exist between the increased uptake of HIV services by PLHIV and the complexity of their impacts on the broader health system.

In the first research article in this special issue, **Williams and colleagues** conducted a meta-ethnography to explore women’s experiences of Option B+ between 2010 and 2019 (Williams, Renju, Moshabela, & Wringe, 2020). The authors found that whilst Option B+ had simplified PMTCT services for both patients and providers, implementation remained sub-optimal due to persistent inadequacies within the health system. The increased volume of women accessing care translated to a greater burden on the health workers, increased requirements for test kits and antiretroviral drugs, and further pressure on health information systems. The authors recommend that health system strengthening needs to focus on: health workers’ capacity to offer empathetic and quality care; address reporting challenges to better capture and track patients and improve facility infrastructures to provide the space required to ensure privacy. These findings are relevant for the implementation of UTT to the whole population.

In the second paper in this special issue, **Etoori and colleagues** continue the focus on Option B+, exploring the relationship between early infant diagnosis (EID) and mothers’ engagement in care under Option B+ (Etoori et al., 2020). They found that mothers who disengaged from care during pregnancy were less inclined to utilise EID as they lacked information about its availability and benefits. Mothers who remained engaged often repeatedly used EID as reassurance that the child remained negative. Similarly, the practice of EID influenced maternal engagement in care. Some mothers used their child’s negative result as a proxy for their status, subsequently disengaging from care. The authors conclude by saying that women’s care-seeking practices for themselves and their infants work in a symbiotic ecosystem and should be explored interdependently to tailor interventions to improve EID uptake and care engagement.

In their paper, **Hassan and colleagues** also focus on Option B+ and describe the facility-level implementation of policies for integrating HIV care within maternal health services and explore

experiences of service users and providers (Hassan et al., 2020). Policy in all countries included HIV testing during antenatal care (ANC), same-day ART initiation for HIV-positive pregnant women, and postpartum referral to ART clinics, with all policies well implemented within health facilities. Whilst most women were comfortable with HIV testing in ANC, some felt that opting out would lead to sub-standard services later during their pregnancy. Some facilities conducted group post-test counselling for HIV-negative women, raising concerns of unintended HIV status disclosure. Variations in time of postpartum referral varied by country and women shared different experiences of this process which could impact uptake and retention in care.

In the fourth article **Dube and colleagues** examined the consequences of male partner engagement in the context of Option B+ in the three countries (Dube et al., 2020). They reported that couple's testing facilitated HIV status disclosure and promoted HIV care-seeking. However, several unintended consequences emerged, including women attending without partners being refused ANC or having longer waiting times. Some women were required to obtain letters from village leaders to justify their partner's absence, leading to delayed or disrupted care-seeking. When partners attended ANC, consultations were reportedly more likely to focus on HIV testing, and less on antenatal or neonatal care. They found that strategies to increase men's attendance at HIV clinics with their partners can promote mutual support within couples for HIV care engagement, but may risk undermining engagement in pregnancy and HIV care for some women if over-stringently applied. The authors highlight a need for additional efforts to address the underlying pervasive stigma associated with HIV testing and treatment, both alone and as a couple.

The fifth research article by **Kumwenda and colleagues** explores the evolution from Option B+ through to UTT for the general population (Kumwenda et al., 2020). The authors conducted a stakeholder analysis and applied Kingdon's 'streams' model to explore how problems, policies and politics converged to provide a window of opportunity for UTT roll-out. Weak health systems and sub-optimal care retention persisted in the build up to UTT. The adoption and implementation of Option B+ policy facilitated the uptake of UTT, however the authors found that the policy processes leading to UTT were open to pressures and influence. The extraordinary financial support which enabled the widespread and rapid implementation of UTT skewed the power balance and in some instances left little space for locally-derived solutions to respond to the specific health system abilities and epidemiological contexts. The authors conclude that whilst continued support is needed to enable the implementation of the UTT policy in resource-constrained settings, the support should aim to strengthen and supports the whole health system from the policy development process through to facility-level implementation.

Luwanda and colleagues focus their research on the implementation of facility-based HIV testing policies (Luwanda et al., 2020). The authors report that most HIV testing policies in each of the three countries were explicit and aligned with WHO recommendations. Policies pertaining to service coverage, access, and quality of care were well implemented. However, linkage to care and the provision of outreach HIV testing for key populations were poorly implemented. The proportion of facilities reporting HIV test kit stock-outs in the past year still occurred in some facilities but had reduced over the study period in all sites. The authors conclude by calling for increased efforts to address HIV test kit stock-outs and to improve linkage to care among people testing positive in order to reach the 90-90-90 targets.

The study by **Songo et al.** looked to understand the consequences of changing HIV health workforce policy on practice in the context of UTT (Songo et al., 2020). The study was conducted in two of the three SHAPE study sites (Malawi and Tanzania) and found that task-shifting and task-sharing policies were explicit by 2013. In facilities, the cadre mix of providers varied by site and changed over time, the introduction of lay counsellors in Malawi, was perceived to have eased the workload of other providers, but lay counsellors reported inadequate support. Patient loads per provider increased in both settings for HIV tests and visits by ART patients and were not met with corresponding increases in provider capacity in either setting. The authors conclude by stating that although increasing patient numbers bodes well for achieving universal ART coverage, the quality

of care may be undermined by increased workloads and insufficient provider training. They recommend that whilst task-shifting strategies may help address workload concerns, careful monitoring, supervision and mentoring is required to ensure effective implementation.

Differentiated and patient centred service delivery approaches have come to the forefront to increase the uptake of and adherence to ART during UTT implementation and are recommended by the WHO. **Chimukuche and colleagues** found that differentiated service policies varied across countries, but none specifically accounted for pregnant or postpartum women. However, they found some implementation of differentiated services for pregnant and postpartum women beyond stipulated policies in all settings. They reported that these adaptations were appreciated by pregnant and postpartum women, and could improve care engagement (Chimukuche et al., 2020).

In their study, **Renju and colleagues** looked at the implementation of CD4 count and viral load testing and various factors that could explain the divergence of facility level implementation from WHO guidance and national policy (Renju et al., 2020). They reported that whilst patients and providers valued both tests, they did not always understand their functions. The authors recommend that in addition to continued support for scaling-up viral load testing, renewed focus should be placed on the ongoing value of point-of-care CD4 tests in the UTT era, including its role in assessing disease progression and informing clinical management of cases to reduce HIV-related mortality.

Finally in their study **Vyas et al.** estimated the costs of Option B+ for HIV-infected pregnant women in 12 facilities in Tanzania, from a provider perspective (Vyas et al., 2020). They reported a total of HIV testing episodes was 25,593 with 279 HIV cases identified yielding a 1.1% positivity rate. The average cost per testing episode was US\$5.49 (range US\$2.13 to US\$13.93), and the average cost per HIV case detected was US\$503.29 (range US\$230.61 to US\$3330.38). The number of pregnant women initiated on ART was 278. The mean cost per patient-year on ART was US\$159.89 (range US\$100.91 to US\$812.23). The average cost of neonatal HIV care was US\$90.09 (range US\$41.53 to US\$180.26). PMTCT service costs varied widely across facilities due to variations in resource use, number of women testing, and HIV prevalence. The study provides further evidence against generalising cost estimates, and that budgeting and planning requires context specific cost information.

The papers in this volume illustrate how the adoption and implementation of large-scale HIV testing and treatment programmes has both challenged and strengthened health systems in each of the study settings. The resilience of health systems, when UTT policies are implemented has been influenced by a range of political, institutional, material and relational factors in these three study settings across East and Southern Africa. Moving forward, continued efforts are needed to ensure that implementation of such bold and far reaching policies serve to strengthen and not weaken health systems so that they are well placed to reach the ambitious goal of AIDS elimination by 2030, as well as to serve populations and the move towards universal health coverage (World Health Organisation, 2019).

Disclosure statement

No potential conflict of interest was reported by the author(s).

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