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Differentiated Antiretroviral Therapy Delivery: Implementation Barriers and Enablers in South Africa

Melissa Sharer, MPH, MSW, PhD* • Nicole Davis, MPH • Ndinda Makina, MPH • Malia Duffy, RN, FNP-BC, MSPH • Sabrina Eagan, MSN, MPH

Abstract

Scale-up of antiretroviral therapy (ART) for people living with HIV requires differentiated models of ART delivery to improve access and contribute to achieving viral suppression for 95% of people on ART. We examined barriers and enablers in South Africa via semistructured interviews with 33 respondents (program implementers, nurses, and other health care providers) from 11 organizations. The interviews were recorded, transcribed, and analyzed for emerging themes using NVivo 11 software. Major enablers of ART delivery included model flexibility, provision of standardized guidance, and an increased focus on person-centered care. Major barriers were related to financial, human, and space resources and the need for time to allow buy-in. Stigma emerged as both a barrier and an enabler. Findings suggest that creating and strengthening models that cater to client needs can achieve better health outcomes. South Africa's efforts can inform emerging models in other settings to achieve epidemic control.

Key words: antiretroviral therapy differentiation, community ART programs, HIV treatment, South Africa, stigma

Scale-up of treatment for people living with HIV (PLWH) requires differentiated models of antiretroviral therapy (ART) dispensing and delivery to fully implement the treat-all approach. Because there is no one-size-fits-all solution in delivering ART to PLWH, differentiated models have emerged as client-centered adaptations of HIV services to better serve the needs of individual clients and reduce the burden on the health system (International AIDS Society, 2017; Magadzire, Marchal, & Ward, 2015; Mutasa-Apollo et al., 2017; World Health Organization, 2016). We have found no studies that examine barriers and enablers to services such as task-shifting and other outcomes to inform service provision, quality improvement, and scale-up (Hagey et al., 2018) for ART dissemination. South Africa has almost 4 million people on ART, more than any other country in the world, but more than 3 million PLWH are still in need of treatment (Joint United Nations Programme on HIV/AIDS, 2017). Given this magnitude of people who need HIV treatment, the National Department of Health (NDoH) in South Africa has implemented community-based and clinic-based differentiated care models to reduce the frequency of clinic visits, allow stable patients to receive their ART medication in larger quantities, and make medications available closer to where clients live or work (Medicines Sans Frontiers, 2012; Republic of South Africa National Department of Health, 2016).

In an effort to move clients from traditional, HIV clinic–based care into more person-centered approaches to ART delivery, South Africa has begun to implement and scale multiple models of ART distribution. A major component of these efforts is the Centralised Chronic Medicines Dispensing and Distribution program, which dispenses and prepacks medications from a central dispensary for clients enrolled in differentiated distribution programs. From there, prepackaged ART is delivered to various differentiated ART programs at facility and community levels for distribution to clients through their mechanisms of choice (Republic of South Africa National Department of Health, 2016).

Clinic-based approaches include decentralization of dispensing and delivery services from hospitals to primary

Sponsorships or competing interests that may be relevant to content are disclosed at the end of this article.

Melissa Sharer, MPH, MSW, PhD, is a Senior HIV Advisor, John Snow, Inc, Arlington, Virginia, USA, and Director and Assistant Professor of Public Health, St. Ambrose University, Davenport, Iowa, USA. Nicole Davis, MPH, is a Senior Monitoring and Evaluation Advisor, John Snow, Inc, Arlington, Virginia, USA. Ndinda Makina, MPH, is a Senior Research Associate, John Snow, Inc, Pretoria, South Africa. Malia Duffy, RN, FNP-BC, MSPH, is a Senior HIV Advisor, John Snow, Inc, Boston, Massachusetts, USA. Sabrina Eagan, MSN, MPH, is a Senior HIV Advisor, John Snow, Inc, Boston, Massachusetts, USA.

**Corresponding author: Melissa Sharer, e-mail: sharermelissaj@sau.edu*

Supplemental digital content is available for this article. Direct URL citations appear in the printed text and in the HTML and PDF versions of the article at www.janacnet.org.

http://dx.doi.org/10.1097/JNC.0000000000000062

care centers, which have been shown to be effective in increasing client adherence to ART (Kredo, Ford, Adeniyi, & Garner, 2013; Kwarisiima et al., 2017). In addition, some clinics have piloted approaches that allow stable clients to retrieve their prepackaged medications through spaced/fast lane appointments or through facility-based adherence clubs (often facilitated by a nurse), enabling them to bypass other nonessential clinic services (Republic of South Africa National Department of Health, 2016).

Community-based approaches have also been shown to increase adherence and access to ART (Decroo et al., 2013) in South Africa. These approaches include community-based adherence clubs and community-level pickup points, which can be temporary or permanent sites in communities, including pharmacy retailers (Grimsrud, Barnabas, Ehrenkranz, & Ford, 2017; Republic of South Africa National Department of Health, 2016).

The aim of our formative investigation was to (a) gain in-depth understanding of perceived implementation barriers and enablers for differentiated ART delivery models in South Africa and (b) explore pragmatic concerns from program implementers and nurses related to sustainability and integration into existing ART programs to support treatment scale-up.

Methods

Setting and Study Sample

Our evaluation design was theoretically informed by participatory action, ultimately aiming to achieve depth and breadth of results based on what the interviewees knew from working with and on behalf of PLWH (Lincoln, Lynham, & Guba, 2011). Participatory action research guided the interviewers and interviewees, allowing them to uncover practical knowledge and to co-create an understanding of enablers and barriers for each approach examined. Barriers and enablers were examined via semi-structured interviews (see Interview Guide, Supplemental Digital Content 1, http://links.lww.com/JNC/A3), providing depth and breadth of information based on what the interviewees knew from working with and on behalf of PLWH, which was combined with the knowledge and experiences of the interviewers, allowing results to emerge from knowledge informed by practices, experiences, and based on evidence. A total of 11 organizations implementing differentiated ART approaches in 4 provinces (Gauteng, KwaZulu-Natal, Eastern Cape, and Western Cape) elected to participate in the evaluation. Respondents included program implementers and providers working with differentiated ART delivery approaches. The evaluators allowed the organization to schedule group interviews or individual interviews with key informants.

The project was a voluntary evaluation of U.S. Agency for International Development (USAID) implementing partners, and the study design reflected principles of participatory action research study, which included co-creating the question, the interview guide, and results via collaboration with USAID and South African partners. The interviewees were a preselected (nonrandom) group of experts who worked on particular USAID-funded projects and who were deemed most knowledgeable about the issue. From this initial list of key informants, snowball sampling, a nonprobability sampling technique, was used to identify other key informants.

Data Collection

From October to November 2016, the research team used respondent-specific interview guides to conduct a series of semistructured interviews and focus group discussions with 33 individuals from 11 organizations (Table 1). The research team interviewed the leaders of organizations to get a general overview of the types of models they were implementing. These interviews helped to identify other program implementers within the organization (i.e. nurses, physicians, and HIV counselors) who could provide more details and first-hand experiences with the barriers and enablers associated with differentiated ART delivery models. All interviews were conducted in English with key informants selected by each partner organization.

Interview guides were designed to examine challenges and enablers associated with implementing an ART delivery approach, with probes to elicit lessons learned, and were constructed based on the existing literature and modified using feedback from technical experts. Interviews further aimed to examine structure, coverage, and perceived performance of various ART delivery approaches, as well as the perceived client perspective related to desirability, uptake, and issues related to stigma. The interviews explored barriers and facilitators related to

Table 1. Number of South African Organizations and Types of Respondents Interviewed

	Organizations	Health Care Providers[a]	Implementers[b]
Total	11	12	26

[a] Health care providers included eight nurses, two physicians, two counselors.
[b] Total $N = 33$, note: five respondents self-identified as both implementers and health care providers.

implementing ART delivery. Comprehensive notes were taken throughout and after interviews and focus groups, and all sessions were audio-recorded and professionally transcribed by South African research associates.

The evaluation was approved by the John Snow, Inc. Institutional Review Board and by USAID South African mission. John Snow, Inc. is a public health management consulting and research organization dedicated to improving the health of individuals and communities in the United States and around the globe with a mission to improve the health of underserved people and communities. All research was conducted in accordance with the approved submission, with written informed consent obtained from each participant.

Data Analysis

Interviews and focus group discussions were recorded, transcribed, and analyzed using NVivo 11 software to identify emerging themes. Each transcript was categorized as belonging to either a program implementer or health care provider (HCP); in five instances, individuals self-identified as both program implementers and HCP. An initial skeleton coding frame composed of the major barriers and enablers associated with various differentiated ART delivery models was created by the first two authors immediately following data collection. This frame was further refined during coding to allow for the capture of all emerging themes. To ensure consistent coding, two authors coded a sample of transcripts, reviewed each other's coding and finalized code definitions. Each transcript was then coded separately by two authors according to the agreed-upon framework. On completion, each author revisited the framework and further revised it using emergent subthemes. Axial and open coding of interview texts allowed for deconstruction of the text and led to the emergence of common themes and recommendations for action. Coding results of respondent type, type of ART delivery approach, and common themes were synthesized, and the key findings were described and captured.

Results

Major enablers of ART distribution contributing to successful program results were flexibility, client-centered care, and providing clients with a variety of mechanisms to receive care. Barriers included the lack of linkage to formal health systems and of resources at the health services and systems levels, with fear of stigma and discrimination also interfering at the client level. Major barriers that negatively affected ART dispensing and distribution were a lack of financial, human, and space resources. The themes for barriers and enablers were classified as client related, health services related, or systems related (Table 2).

Time

Shorter wait times was mentioned frequently by HCP and program implementers as a key enabler at the client level, allowing clients to spend less time in the clinic and more time at work and/or pursuing other commitments (Table 3). Nurses and other HCP reported having more time to focus on clients experiencing challenges. Many interviewees spoke of barriers related to the time it took to market new ART delivery mechanisms internally and to train/prepare facility staff. Most nurses and other HCP mentioned that an adjustment period was needed to allow clients to get used to new models of care. They felt that some clients still preferred to receive regular HIV care in a clinical setting that included deepening nurse/client relationships, receiving health screens, and connecting to other clients; although these activities involved waiting and spending the entire day at a clinic. Respondents reported that many clients were reluctant to give up the client/provider relationship they had established.

Stigma

Mechanisms such as pharmacy pickup and clinic-based fast tracks were mentioned as possibly reducing stigma by allowing individuals to pick up medications at their convenience, thus avoiding the stigma that can occur with frequent facility visits. Furthermore, the early shift to including medications for other chronic conditions at pickup points emerged in an effort to reduce HIV-related stigma associated with these models. Many interviewees mentioned decreases in stigma for clients as treatment access expanded and HIV was increasingly perceived as a chronic condition (Table 3).

Flexibility

Nurses and other HCP stated that having multiple sites/means to collect ART was part of the overall shift toward client-centered care. Many participants spoke about the different options they offered clients, and they also noted that flexible program approaches could be adapted to the context of the region/province (Table 3). Overall, program implementers and HCP appreciated flexibility and reported that it increased the appeal of these models for clients.

Table 2. Barriers and Enablers for Each Theme

	Client Level		Nurse/Health Care Provider (HCP) Level		Systems Level	
Themes	**Enabler**	**Barrier**	**Enabler**	**Barrier**	**Enabler**	**Barrier**
Time						
Shorter wait times	×					
Less client time away from work	×					
More nurse time with hard-to-reach/lost-to-follow-up clients	×		×			
Clinic less congested	×		×		×	
Time for client/provider buy-in		×		×		
Time for provider training/retraining				×		
Time needed to market advantages						×
Stigma						
Inclusion of medications for other chronic conditions	×		×		×	
Perceived disclosure of status in certain models		×				
Flexibility						
Client-centered choice	×		×			
Policies allow for model diversity	×		×		×	
Multiple modalities	×		×		×	
Leadership and guidance						
Clear guidelines, training models, standard operating procedures			×		×	
National leadership			×		×	
Diversity of donors	×		×		×	
Ownership confusion						×
Concerns with targets/projections				×		×
Linkage to care						
Regular monitoring occurred	×		×			
Establishing client-provider relationships	×		×			
Limited client interaction with health system		×		×		
Resources						
Lack of space		×		×		
Funding challenges				×		×
Infrastructure				×		×

Table 3. Illustrative Quotations of Enablers and Barriers for Novel ART Delivery Models

Enablers of Novel ART Delivery Models	
Time	• "[T]he patients benefit…because they are coming every 2 months…they save on transport money… they don't have to take a day off at work."—HCP/Nurse
Stigma	• "We started off this program by only supplying to the HIV patients. I had a major problem with it … because we just stigmatized the whole program … So what we are doing now … [is to] issue out all chronic conditions."—Program Implementer
	• "In terms of patient perspective it does not seem to be as [big] of a problem as it once was, stigma generally [as] most people are just interested in getting their care, from what I see."—Program Implementer
Flexibility	• "The patient can choose … so they have now for the first time really being able to choose … choose where they want to get medication."—Program Implementer
	• "[Clients] choose where they want to collect [medicine] … it's based on a number of factors, one is not being seen in the community and being anonymous … in most instances [clients] want to move out of the known area and collect medication somewhere else."—Program Implementer
	• "The model is generalized, and at the end of the day the district must own the process, they must be the one [that] decides [what] we implement … in some province they did 3 months' supply, in some they did 2 months, in some they want to integrate and combine ARVs with NCD medication."—Program Implementer
	• "Different clinics have different models according to the needs of the people … we really like what we have … because what happens is that one clinic is not exactly the same with another clinic."—HCP/Provider
Policy, leadership and guidance	• "The SOP is the NDOH structure … [Provinces can] adapt the SOP to their need, because Free State is completely different to Mpumalanga, with regards to resources and needs … so it's not rigid, they [can] adapt."—Program Implementer
Linkage to care	• "One of the key things about the adherence clubs is that because we weigh them … you can identify if the patient is weak, which is also an indication of nonadherence. So it is protective."—Program Implementer
Barriers of Novel ART Delivery Models	
Time	• "Buy-in from the staff was also difficult to achieve … it's been over a 2-year period, nurses do see now the benefits of the clubs and the managers. But it took time for them to sort of come to that."—Program Implementer
	• "It does take a lot [of time], yes, to convince … it requires a lot of change in mindset, it's not only in regard to HIV. If you look how patients … bond [with] heath providers."—Program Implementer
Stigma	• "I think the key [reason clients opted out over] the last 2.5 years is … stigma. The adherence clubs are seen as clubs for people that have HIV …. They would rather sit and wait in a facility and be lost in amongst the crowd. So that has still to be addressed."—Program Implementer
	• "[These delivery models] add to stigma because there are not yet communicable diseases and HIV packaged together."—Program Implementer
	• "In my experience with the clubs, the stigma is there … you may have an adherence club member who is attending a facility away from the community and an adherence club. So the communities don't know their HIV status … that happens all the time."—Program Implementer
Policy, leadership, and guidance	• "It's a pilot. Now that's being rolled out so I think time will tell… there are these targets set and they have impressive numbers … but it's not anywhere close to the target they anticipated."—Program Implementer
Linkage to care	• "But I think the big thing is when you wait in the line, they only give ARVs or chronic meds. We never talk to them about or check adherence, it is just come pick up your medicine and go."—HCP/Provider

(*continued on next page*)

Table 3. (*continued*)

Barriers of Novel ART Delivery Models	
	• "Getting people out of the facilities … shifts people away from a focus on adherence … [the goal is] getting people out [of the clinic]…. I understand they have to go together, but also I think the way they [think about] the approach or make decisions is not as patient centered as maybe it should [be]."—Program Implementer
Resources	• "[If] you think about the logistics of getting … 2 months supplies for each person, and if you have three clubs a day, it's 90 people. And if you do have to [do] it for 5 days a week, you start to look into the logistics: space for people to meet, space for storage."—Program Implementer
	• "I will give you an example—the minister decides that the number of patients recruited should double, but nobody tells treasury and nobody does the math to figure how much this is going to cost. Then all of a sudden it gets halfway to the target nearly everybody stops because you have run out of money."—Program Implementer
	• "I think it will be a big challenge in other provinces, more rural areas where you find the infrastructure is not sufficient … the pharmaceutical [system] … is not well functioning."—Program Implementer

Note. ART = antiretroviral therapy; ARV = antiretroviral; HCP = health care provider; NCD = noncommunicable disease; NDOH = National Department of Health; SOP = standard operating procedure.

Policy Related to Leadership and Guidance

At the health services, policy, and systems levels, the 2016 NDoH Adherence Guidelines were codified, which increased client options and flexibility while standardizing key criteria, such as eligibility and start date, across all options. In addition to creating new policies with clear program guidance, the NDoH provided strong leadership and support for transfers to new models. Respondents stated that the guidance was an enabler in that it promoted flexibility in each model. Many interviewees reported that having clear training manuals and standard operating procedures facilitated changes and was an enabler to adopting new and scaling up existing ART delivery mechanisms (Table 3). Another critical enabler was to start in pilot provinces and finalize procedures before national scale-up.

Monitoring targets were set by NDoH; however, many program implementers mentioned that the targets were confusing and unrealistic, noting that targets did not adequately consider the realities of moving clients to new systems without enough time, funds, and other resources for clients to understand and adopt new ART delivery mechanisms.

Linkage to Health Services

Respondents cited that one of the main perceived benefits to clients being in an adherence club, which is a group of patients who meet regularly to pick up their medications without having to attend a full clinic appointment, was continued linkage to the facility. Many groups included regular symptom screenings and weight checks, among their activities, allowing for quick referrals for follow-up (Table 3). Given the importance of maintaining a linkage between the client and the health system, some respondents expressed their concern that delivery models might not provide a strong enough linkage to formal care, potentially leading to symptoms going unnoticed or risking a client's retention. Many cautioned that some of these models, such as pharmacy pickup, could pull clients too far out of the facility, potentially putting them at the risk for default and not achieving viral suppression.

Resources

Many respondents described a lack of key resources and unanticipated costs as barriers after implementation. Many of the costs were low but still presented challenges because they had not been accounted for in the budget. Respondents mentioned a lack of space for either client meetings or proper storage of prepacked medications. Funding challenges were mentioned with particular concern in the context of rapid scale-up. Additionally, each province had different systems and infrastructure capacities, and many participants noted that starting new services in rural or other capacity-challenged settings could be difficult (Table 3).

Discussion

Flexibility and time savings were repeatedly discussed as enablers at the client and health services levels. Shorter

wait times were mentioned frequently, as beneficial for clients, who spent less time at the clinic, and also for nurses who could spend more time with higher-need clients, a finding consistent with studies assessing enablers to ART retention in South Africa (Bedelu, Ford, Hilderbrand, & Reuter, 2007; Decroo et al., 2013; Grimsrud, Sharp, Kalombo, Bekker, & Myer, 2015; Mukumbang, van Belle, Marchal, & van Wyk, 2016). Program implementers and HCP felt that the written policy, which included clear guidance, was beneficial. In particular, policies that allowed clients to access medication via multiple options reinforced client choice and empowerment, and ultimately allowed for medication to be delivered closer to where clients worked and lived. Model flexibility was directly linked to policy creation/guidance, but it could lead to higher costs related to human resources needs that have been associated with delivering more customized services to increasing client numbers (Bango, Ashmore, Wilkinson, van Cutsem, & Cleary, 2016). Despite this, giving options to clients, with the ability to move within a system, were overwhelmingly viewed as positive by respondents. Additionally, strong guidance and eligibility requirements at the national policy level provided scaffolding for standardization in many contexts (e.g., rural, urban). Key enablers included the importance of having inspired leadership, sound management and guidance, and transparent governance and coordination.

Many respondents highlighted the need for standards and consistency with regard to adherence clubs, including regular facilitators. Facilitators were an important link to further care for the client. Such linkages continuously emerged as enablers affecting the model's success, whereas the lack of these linkages was consistently reported as a barrier. Linkages may increase retention in care critical to plan for because more clients are moved into these models, which is consistent with findings of clients enrolled in adherence clubs in Khayelitsha, South Africa, who reported fewer missed visits (Bango et al., 2016). Lack of resources (financial, human, space) also emerged as a barrier at the health services and systems levels. Participants reported difficulty meeting unanticipated challenges that emerged after implementation, such as finding suitable meeting spaces. Furthermore, there was some apprehension about reaching targets with available resources and many respondents acknowledged that new resources might be needed to support scale-up. These factors should be seriously considered as scale-up continues. Another critical finding was the need to ensure time for clients and providers to see the value of new dispensing and delivery approaches rather than promoting the process too quickly, which could be a barrier to change.

Finally, stigma emerged as both a barrier and enabler. HCP repeatedly reported that some clients had a real and pervasive fear of involuntary disclosure in the adherence club models, which was concerning, as stigma is a known threat to retention and adherence (Coetzee, Kagee, & Vermeulen, 2011; Ware et al., 2013). Consistent with previous studies, certain delivery methods (pharmacy pickup, clinic-based fast tracks) were mentioned as potentially stigma reducing, given that they reduced time spent collecting ART and the frequency of visits. As a result, clients felt that it was less likely for them to be seen at the clinic or for people to notice their frequent visits to the clinic (Decroo et al., 2011; Kwarisiima et al., 2017; Mabirizi, Embrey, Saleeb, & Aboagye-Nyame, 2014; Macdonald, Verster, & Baggaley, 2017). Club participation did not require disclosure, but it was reported that clients thought their HIV status disclosure was a necessity for joining. Such perceptions have the potential to be off-putting and to decrease client participation. Indeed, some HCP reported that clients attended adherence clubs outside of their own communities to avoid unwanted public disclosure of their status, which was consistent with findings from a similar study in South Africa (Kagee, Nothling, & Coetzee, 2012). HCP who had less interaction with clients were more likely to say that stigma was not an issue and that as new models of ART delivery emerged, stigma concerns could eventually be eradicated. However, these opinions contrasted with those of nurses with frequent interaction with clients, who noted that many community members still perceived that alternative delivery methods were for PLWH only, which might keep PLWH from participating. Respondents reported that some clients attempted to avoid risks of unwanted disclosure at the community level by staying in their facility-based adherence clubs rather than moving to community-based groups or by joining community adherence groups further away from their residences.

Interestingly, our findings were among the first to emerge showing evidence of the potential negative impact of stigma in community delivery models, which was reinforced by findings in Malawi (Pellechia et al., 2017). To the best of our knowledge, these emerging findings may be attributed to the reality that South Africa is more advanced in nationalizing, changing, and integrating differentiated care into the health service delivery systems, resulting in new lessons (Dudhia & Kagee, 2015; Magadzire et al., 2015; Raschaert et al., 2014). Recent data from Malawi reinforced the findings from South Africa and noted that community adherence clubs might have little impact on reducing HIV-related stigma (Pellecchia et al., 2017). Specific service delivery and policy recommendations are shown in Table 4.

Table 4. Recommendations for Nurse-Led Differentiated ART Delivery Scale-up

Policy Recommendations	Themes
• Develop policies and guidance to guide pilot and roll-out and standardize a foundation for scale-up.	Leadership, governance, policy guidance
• Write policies that include the delivery of medicines for multiple chronic illnesses, including ART.	
• Pilot as many ART delivery models as possible within the constraints of human and financial resources. Analyze findings and identify contextual modifications prior to scale up services.	
• Plan for extra resources (human, financial, and space) to be available for rollout. Short-term goals may require more funds than anticipated, although the long-term goals include financial savings.	Resources (financial, supply chain, human resources for health)
• Coordinate efforts among donors while promoting national leadership.	
• Plan and budget for in-country supplies/commodities with all donors being coordinated.	
Service Delivery Recommendations	**Themes**
• Phase in novel approaches to give clients, nurses/health care providers, and systems time to adjust and prepare for more efficient large-scale implementation.	Client/nurse/health care provider acceptability and attitudes
• Consider how hard-to-reach populations (e.g., men, adolescents) access services, and tailor programs appropriately. Plan for innovative workplace and youth-friendly approaches.	
• Design approaches to ensure a direct relationship with facility-based providers (e.g., regular [although less frequent] clinic check-ins).	
• Implement peer-support and community adherence approaches but acknowledge that these options may not be appealing to all.	

Note. ART = antiretroviral therapy.

Strengths and Limitations

One of the primary strengths of our evaluation was the use of multiple data sources including focus group discussions and semistructured interviews, involving program implementers and HCP with experience introducing new treatment methods. Key limitations included the lack of interviews with clients and that participants were limited to USAID-funded organizations, which were beyond the scope of this evaluation. The utilization of snowball sampling that emerged from the initial list of interviewees allowed the study to take place with a limited number of initial participants, and further study is needed using quantitative methods.

Future studies should allow for randomization and include clients' voices to increase the relevance of the findings about client experiences and gain better understandings of how models could be modified to increase demand and meet client needs. Subsequent evaluations could include groups implementing differentiated ART approaches that do not receive USAID funding to identify potentially useful models that could successfully reach clients in unique contexts and populations.

Conclusions

Ultimately, multiple methods of ART delivery are needed to cover the millions of PLWH who should be on treatment in South Africa and globally. Our findings can inform strategies to facilitate successful ART delivery scale-up at the provider, facility, and policy levels (Table 4). Creating and strengthening models that cater to the needs and desires of clients will help transition HIV care and treatment from a system of long-term care managed by health workers to one that is person centered, with clients who are resourced and empowered to manage their own treatment regimens, achieve better health outcomes, and lead longer, healthier lives. The innovative efforts in South Africa have yielded robust findings that may inform other contexts and settings,

Key Considerations

- ❍ Differentiated HIV treatment delivery models are critical to achieve HIV epidemic control.
- ❍ Delivery models that are person centered can empower clients to manage treatment regimens, achieve better health outcomes, and lead longer, healthier lives.
- ❍ Differentiated models must consider and address stigma reduction prior to implementation.
- ❍ Findings on differentiated ART delivery models can inform other settings and provide a foundation for sustained epidemic control.

ultimately laying a foundation of learning to inform emerging models of differentiated care.

Disclosures

The authors report no real or perceived vested interests related to this article that could be construed as a conflict of interest.

Acknowledgments

This study was funded by the generous support of the American people through the President's Emergency Plan for AIDS Relief (PEPFAR) with the U.S. Agency for International Development (USAID) under the terms of the cooperative agreement, Strengthening High Impact Interventions for an AIDS-free Generation, number AID-OAA-A-14-00046. The contents are the responsibility of AIDSFree and do not necessarily reflect the views of USAID, PEPFAR, or the U.S. Government. The authors would like to thank the following individuals and organizations: Ugochukwu Amanyeiwe, Nida Parks, Sthembile Gombarume, Catherine Brokenshire-Scott, Refilwe Sello, AgriAids, ANOVA, BroadReach, Foundation for Professional Development, Hospice and Palliative Care Association of South Africa, Kheth'Impilo, MatCH, Project Last Mile, Republic of South Africa Department of Health, Right to Care, USAID|South Africa, Wikoppen Health and Welfare Centre, and Wits Reproductive Health and HIV Institute.

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