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A qualitative study of the determinants of HIV guidelines implementation in two south-eastern districts of Tanzania

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Abstract

Current HIV policies in Tanzania have adopted the three long-term impact results of zero new infections, zero HIV deaths and zero stigma and discrimination. Strategies to reach these results include scaling-up HIV Testing and Counselling (HTC); Preventing Mother-To-Child Transmission (PMTCT); and strengthening Care and Treatment Clinic (CTC) services. Previous studies showed that HIV policy and guideline recommendations were not always implemented in rural South Tanzania. This study aims to identify the determinants of HIV guideline implementation. A qualitative study of 23 semi-structured interviews with facility in-charges; healthcare workers; district, regional and national HIV coordinators was conducted. Five health facilities were purposively selected by level, ownership and proximity to district headquarters. Interviews were analysed according to Fleuren's five determinants of innovation uptake related to: strategies used in guideline development and dissemination; guideline characteristics; the guideline implementing organization; guideline users; and the socio-cultural and regulatory context. None of the facilities had the HTC national guideline document. Non-involvement of providers in revisions and weak planning for guideline dissemination impeded their implementation. Lengthy guidelines and those written in English were under-used, and activities perceived to be complicated, like WHO-staging, were avoided. Availability of staff and lack of supplies like test kits and medication impeded implementation. Collaboration between facilities enhanced implementation, as did peer-support among providers. Provider characteristics including education level, knowledge of, and commitment to the guideline influenced implementation. According to providers, determinants of clients' service use included gender norms, stigma, trust and perceived benefits. The regulatory context prohibited private hospitals from buying HIV supplies. Being tools for bringing policies to practice, national guidelines are crucial in the efforts towards the three zeros. Strategies to improve providers' adherence to guidelines should include development of clearer guideline dissemination plans, strengthening of the health system, and possibly addressing of provider-perceived patient-level barriers to utilizing HIV services.

Key words: HIV policy and guidelines, implementation gaps and determinants, rural Tanzania

Key Messages

- Practice guidelines are tools through which policies can be practiced and therefore their implementation as intended is crucial for any health intervention.
- In rural Tanzania, implementation of HIV guidelines was sub-optimal due to a range of factors originating from different stages of the guidelines process from development to implementation, as well as from the socio-cultural context of the community.
- Consideration of providers' characteristics when choosing the format and language of the guidelines, comprehensive planning for guideline dissemination, general strengthening of the health system and consideration of the socio-cultural context of the targeted communities are essential components of interventions to improve implementation of practice guidelines for HIV services.

Introduction

In accordance with the Joint United Nations Programme on HIV and AIDS (UNAIDS) strategy for 2011–2015 entitled "getting to zero", Tanzania has adopted the three global long-term impact results of zero new HIV infections, zero HIV-related deaths and zero HIV-related stigma and discrimination (known as "the three zeros") into its current national multisectoral HIV strategic framework III and the health sector HIV strategic plan III (UNAIDS 2011; NACP 2013; Prime Minister's Office 2013a). The strategies identified to achieve these three zeros include strengthening Care and Treatment Clinic (CTC) services, scaling up HIV Testing and Counselling (HTC) and linking clients to facilities and community-based services, Prevention of Mother-To-Child Transmission of HIV (PMTCT), early infant diagnosis, and care and management of co-infections (NACP 2013).

The three zeros have been adopted at a time when HIV prevalence in the adult population has declined from 7% in 2004 to 5.3% in 2012 (TACAIDS 2013b), with 1.5 million people estimated to be living with HIV by the end 2014 (UNAIDS 2014). Important successes in the response towards HIV in Tanzania include an over 500% increase in number of health facilities providing CTC services from 200 in 2006, to 1209 facilities in 2013 which represents 24% of a total of 5052 health facilities (Prime Minister's Office 2013b; TACAIDS 2014; TACAIDS 2016); an increase in number of patients enrolled in the national care and treatment programme by over 500% between 2006 and 2012 from 115 597 to 749 302 patients (NACP 2012; TACAIDS 2016); and high coverage of PMTCT services with 97% of reproductive and child health clinics offering PMTCT services by end of 2013 (TACAIDS 2014). According to findings of a 2012 Tanzanian survey, anti-retroviral (ARV) treatment was offered by 21% of government health facilities and 18% of private health facilities including faith-based, non-governmental organization (NGO) and private-for-profit health facilities (MoHSW 2013b). These apparent successes are however contrasted with the still large number of HIV-related deaths estimated at 46 000 in 2014 (UNAIDS 2014). Furthermore, in 2012, about 30% of HIV-infected persons aged 15–49 years had not been diagnosed (TACAIDS 2013b) and the use of HIV services and retention in CTC are still major challenges in Tanzania (MoHSW 2013c; UNAIDS 2013).

The quality of HIV service provision will have a direct impact on the outcomes of the proposed strategies (UNAIDS 2011). In Tanzania, the implementation of the national HIV/AIDS control programme (NACP) has been supported by clinical practice guideline for HTC (NACP 2005; NACP 2007), PMTCT (MoHSW 2012; MoHSW 2013d) and CTC (NACP 2012), which are revised to incorporate new evidence and are intended as tools for closing the gap

between evidence and actual practice (Woolf *et al.* 1999). Table 1 shows the different editions of guidelines and that guidelines for HTC, PMTCT and CTC were issued at a median interval of 4, 4 and 5 years respectively.

In 2012–13, the network for Analyzing Longitudinal Population-based HIV/AIDS data on Africa (ALPHA) undertook analyses to understand trends in mortality attributable to HIV/AIDS in its 10 member Health and Demographic surveillance (HDSS) in six African countries (Reniers *et al.* 2014). Subsequent studies were undertaken to understand the contextual factors at the policy, health systems and community level that may influence these mortality trends in each setting. The first of these "context" studies was a review of national policies and guidelines regarding HTC, PMTCT and CTC services in the six countries, including Tanzania (Church *et al.* 2015). This was followed by a survey of the health facilities serving the populations of the 10 HDSSs.

The HDSS in the site of this index study joined the ALPHA network in 2010 and has been conducting demographic surveillance of about 125 000 people since 1996 (Geubbels *et al.* 2015). The site includes 12 public health facilities which were surveyed as part of the ALPHA survey (Wringe *et al.* 2015). Comparing national HIV policies and guidelines with reported practices within these health facilities showed that there were implementation gaps of some guideline recommendations for HTC, PMTCT and CTC. Table 2 presents some examples of the gaps found.

It was therefore important to find out why such gaps existed. Practice guidelines can be seen as an innovation, which Fleuren *et al.* (2004, pg.107) define as an "idea, practice, or object that is perceived as new by an individual or other unit of adoption" (Fleuren *et al.* 2004). Determinants of whether guidelines are adopted or not can be categorized into five groups: those related to the innovation strategy used, to the guidelines, to the adopting person, to the implementing organization and to the socio-political context (Fleuren *et al.* 2004).

Various studies have shown that the use of evidence-based practice guidelines improves health-care processes and has positive or no negative effect on patient outcomes (Worrall *et al.* 1997; Lesho *et al.* 2005; Lugtenberg *et al.* 2009). Although a substantial body of literature exists in high-income countries regarding the use of guidelines and factors that influence their implementation (Grimshaw and Russell 1994; Cabana *et al.* 1999; Joo *et al.* 2000), very few published studies have explored this issue in African settings in relation to HIV policies or guidelines, despite the burden of HIV infection, and the enormous investments into developing evidence-based policies and guidelines for its management and treatment. Regarding specific factors that influence guideline implementation, a systematic review of studies on provider-initiated HIV testing and counselling

Table 1. Editions of HTC, PMTCT, CTC national guideline documents and their approval year

HIV practice guidelines	Year
HIV Testing and counseling	
1. National Guidelines for Voluntary Counseling and Testing (VCT)	2005
2. Guidelines for HIV Testing and Counseling in Clinical Settings (PITC) ^a	2007
3. National guidelines for comprehensive HIV Testing and Counseling ^b	2013
HIV care and treatment	
4. National guideline for the clinical management of HIV and AIDS, 1 st edition	2002
5. National guidelines for the clinical management of HIV and AIDS, 2 nd edition	2005
6. National guidelines for the clinical management of HIV and AIDS, 3 rd edition	2009
7. National Guidelines for the Clinical Management of HIV and AIDS, 4 th edition	2012
Prevention of mother to child transmission	
8. National prevention of mother to child transmission guidelines, 1 st edition	2004
9. National guidelines for prevention of mother to child transmission, 2 nd edition	2007
10. National Guidelines for Comprehensive Care of Prevention of Mother-to-Child Transmission of HIV, 3rd Edition	2012
11. National Guidelines for comprehensive care services for prevention of mother to child transmission of HIV and keeping mothers alive	2013

^aProvider-initiated testing and counseling.

^bThese guidelines include all testing activities; VCT, PITC and even PMTCT related testing.

Table 2. Examples of gaps in guideline implementation identified in facilities in the study area

	HIV Testing and counseling
1.	Not all patients eligible for PITC were tested for HIV
2.	Post-test counseling after HIV testing was not always done
3.	Some patients who tested HIV positive were not registered for care and treatment
Prevention of mother to child transmission	
4.	Not all eligible mothers attending antenatal clinics were tested for HIV
5.	Repeat testing of those who had initially tested negative was not routinely done
6.	Dried blood spots from HIV-exposed infants were not collected as required
7.	Testing of partners of mothers attending ANC was not always done
HIV care and treatment	
8.	Not all recommended pre-ART services were offered e.g. screening for cancer of the cervix
9.	Some providers were not using the pre-ART register as required by guideline
10.	Not all patients attending CTC had tuberculosis screening questions asked
11.	WHO staging was not commonly used even in facilities without CD4- testing facilities
12.	Pill counting was not done for adherence monitoring as proposed by the guideline

(PITC) in sub-Saharan Africa (sSA) showed that sociocultural factors like preference for traditional healers, poverty, poor legal systems for protection of patients' human rights, and weak health systems with acute human resources shortages deterred PITC guideline implementation (Monjok *et al.* 2010). We also found two studies from Tanzania. One was conducted in the referral hospital serving our study site and it found that lack of knowledge among providers, stigma among community members, and unavailability of ARVs at relevant work stations caused poor implementation of PMTCT guideline (Gamell *et al.* 2013). The second Tanzanian study regarding breastfeeding guidelines for HIV-infected mothers showed that the slowness of guideline dissemination, use of the English language in manuals, lack of summaries, lack of supportive supervision, and absence of a reading culture were challenges to the dissemination and hence implementation of the guideline (Shayo *et al.* 2014).

However, no studies specifically explored factors, across the development, dissemination to implementation processes that influence the implementation of national guidelines for the delivery of key HIV services including HTC, PMTCT and CTC. We therefore conducted a qualitative study to find out what determinants made providers of HTC, PMTCT and CTC services to implement or not to implement the respective HIV guidelines in selected facilities within two districts where the facility surveys were conducted.

Methods

Study design and setting

This was a qualitative explanatory study whereby we conducted semi-structured interviews. We selected the interviewees from five health facilities offering HIV services to the residents of the HDSS study site. This site is located on a river valley and spans two districts, Ulanga and Kilombero, with a total population of 673 083 in 2012 (Ministry of Finance 2013). Over 70 ethnic groups live here, 60% of who are immigrants including nomadic ethnicities from northern Tanzania, attracted by the fodder (Geubbels *et al.* 2015). We selected the facilities purposively to include different ownership, different levels and varying distances from the district medical officer's office. Therefore, we included one private (company) hospital, one district hospital that was in transition from being a health-centre, one public health-centre, one private (Catholic Church) dispensary and one public dispensary. Only the district hospital was located within walking distance of the district medical offices. All facilities except the private dispensary offered all three HIV services: HTC involving PITC and Voluntary Counselling and Testing (VCT); PMTCT involving testing of expectant mothers, their partners and infants when born as well as treating mothers and infants who test positive and referring partners who test positive to CTC; and CTC services which include monitoring and treating HIV

infection and opportunistic infections. The private dispensary provided only HIV testing services, also to expectant mothers, and referred those who test positive to a health-centre.

Study participant, sampling and recruitment

This study included facility-based staff (HIV service providers and health facility in-charges) and coordinating staff. At each facility, the facility in-charge along with the person providing HTC, PMTCT and CTC services on the day of the study were selected. Coordinating staff included the district AIDS coordinator, the regional AIDS coordinator and two national HIV programme officers (henceforth referred to as district, regional and national officers respectively). During sampling at the facility level, we approached the facility in-charge who helped in the identification of the providers of HTC, PMTCT and CTC services. Where there were multiple providers, we requested to speak with the most senior or longest-serving provider as they were likely to have more experience with implementation of the guidelines.

After obtaining approval of facility in-charges, district and regional medical officers and national AIDS control programme director respectively, each respondent was asked to provide written informed consent to participate. The district officer of one district did not turn up for three interview appointments and was considered to have declined to participate. Interviews of providers were conducted in the vicinity of the health facility after work and those of coordinating staff were conducted in the vicinity of their respective offices. Although we had planned to interview 26 respondents, saturation on all issues of interest was attained after 14 providers, five facility in-charges and four coordinating staff were interviewed hence recruitment was stopped.

Study tools and data collection

We used three semi-structured interview guides, for providers, facility in-charges and coordinating staff, which were translated into Kiswahili. We piloted and then adapted the guides according to the findings from the pilot interviews. The guides included questions about their knowledge and experiences regarding HIV guideline development or revision, guideline dissemination and implementation. Providers were additionally asked about their thoughts or experiences on why guideline recommendations were not always implemented, with probes for the different determinants of innovation uptake according to Fleuren. These questions were specific to our findings regarding the implementation gaps from the context studies. For instance, we found that providers in the context study did not always provide post-test counselling and so we asked why this would happen. Facility in-charges were in addition asked about their roles in guideline implementation. Coordinating staff were asked about their role in guideline development, revision and implementation, and for their views or experiences on what influences guideline implementation. Individual level semi-structured interviews were conducted with each respondent. Interviews were conducted in July 2015 in Swahili by author MM and 2 experienced assistants with masters and bachelors training in social science. Interviews were recorded and took on average about 1 h for providers and half an hour for facility in-charges and coordinating staff.

Data analysis

The data in audio format were transcribed and analyzed in their original language using NVIVO 10.0 Software. A code book was developed and agreed upon by two authors MM and MD. In line with the framework analysis approach, the transcripts were coded and

codes were merged into themes according to the five main groups of determinants of innovation uptake (Fleuren *et al.* 2004): (1) Determinants related to the guideline strategies, (2) Determinants related to the guideline, (3) Determinants related to the users of guideline, (4) Determinants related to the organization, and (5) Determinants related to the social, cultural and regulatory context of guideline implementation. We considered the guideline strategy to mean the approach that was used in guideline development and dissemination. During analysis, the codes were organized according to the respondent group to look for patterns. We looked for similarities and differences in responses between providers in different levels of facilities, in public and private facilities, between providers and facility in-charges and between coordinating staff and facility-based staff.

Ethical approval was obtained from the Institutional Review Board and the National Institute for Medical Research's ethical committee. All study participants provided informed consent.

Results

Characteristics of participants

Table 3 shows some characteristics of the respondents. All facility in-charges were clinicians, with two of them being medical doctors.

All PMTCT service providers were female except the private dispensary PMTCT testing provider. The ages of all respondents ranged from 29 to 57 years (median = 51 years) and years in HIV service for facility-based staff directly involved in the HIV service provision ($n = 17$) ranged from 3 to 12 (median = 7) years. There was one medical attendant who provided CTC services at the public dispensary. All HIV service providers had been trained on the guidelines of the HIV service they provided. Among the coordinating staff, only one was female. They were all medical doctors except one national officer.

Presence of guideline

We found that HTC, PMTCT and CTC guidelines existed in different versions and that at some facilities like the public health-centre, there was more than one version of the national guideline documents for CTC, the older one at the work station and the latest version was thought to be at the facility in-charge's office. The CTC provider here indicated that she knew what changes were in the newer version and that largely the guideline documents were similar. At all facilities, CTC providers stated that they had the latest national CTC guidelines document, but only two could show them. None of the facilities had any version of national guidelines for HIV testing be it PITC, VCT or the latest integrated HTC national guidelines document. Instead, they had alternative forms of HTC guidelines like training manuals for PITC, smaller documents on couple counselling, algorithms, or charts on HIV testing. All had the latest PMTCT national guidelines document except for the public dispensary.

Determinants related to the strategies used for guideline development and dissemination

Approaches to guideline development, revision and dissemination

According to national officers, the development, revision and dissemination of practice guidelines for HTC, PMTCT and CTC to the country's regions was co-ordinated by the NACP through the respective departments for the three services which were functionally interlinked. It emerged that for the three services, revisions of the guidelines were only triggered by changes in the World Health

Table 3. Characteristics of participants

	Coordinating staff	Private hospital	Public district hospital	Public health centre	Private dispensary	Public dispensary
Total	N = 4	N = 4	N = 4	N = 4	N = 3	N = 4
Gender						
Male	3	3	3	2	1	1
Female	1	1	1	2	2	3
Yrs in HIV^a service						
Range	1–5	6–12	6–12	3–12	4–5	7–10
Median	3	9	11	5.5	4	8
Age						
Range	29–43	35–56	31–52	30–56	54–56	39–65
median	36.5	38	51	50.5	54	49
Profession						
Medical attendant	0	0	0	0	1	1
Nursing	1	1	3	2	1	2
Laboratory technician	0	1	0	1	0	0
Clinician ^b	3	2	1	1	1	1

^aThe facility in-charges from district and private hospital were not offering HIV services.

^bClinician means a cadre of health provider that is trained to prescribed medication in general medical practice. In Tanzania, this includes Medical doctors, Assistant medical officers and Clinical officers.

organization (WHO) recommendations. Coordinating staff narrated similar processes of dissemination of HTC, PMTCT and CTC guidelines. Respondents further indicated that the revision process did not involve representatives of health providers from a lower level or privately owned facilities. According to the national officers, regional officers should represent the concerns of lower level facilities and the association of private hospitals (APHTA) should represent private facility providers in the revision process. However, according to the regional officer who had attended some HIV guideline revision meetings, not all regional officers were involved in guideline development or review processes and APHTA representative were not always present. National officers indicated that the financing of the development, review and dissemination of guidelines was donor dependent.

Guidelines dissemination

The national officers explained that dissemination was mainly through training and distribution of copies of the guideline documents. According to coordinating staff and in-charges of the health-centre and district hospital, guideline distribution was expected to follow the national health service hierarchy with national level distributing to regions, regions to districts and districts to health-centres. Facility in-charges of the health-centre and district hospital stated that they were responsible for supporting dispensaries within their jurisdiction including guideline dissemination. Both national officers indicated that there was neither a clear strategy nor a budget for guideline dissemination and distribution which led to inadequacy of guideline-document copies, delays in dissemination, and haphazard distribution of the documents. For instance, we found that the HTC 2013 guideline document had not reached any of the five facilities at the time of the study in July 2015. To cope with the inadequacy of copies, both the district officer and the health-centre in-charge explained how they made photocopies of only important pages and sent to the facilities that had not yet received copies. Coordinating staff also explained how they coach and mentor these providers on the guidelines that they had not yet received. (Table 4, quote 1)

Regarding training, respondents who were lower cadre than clinicians from all facilities except the district hospital, complained about what they perceived as unfairness in the selection of trainees

in that the same people attended trainings over and over, and that some providers who don't participate in HIV services were sometimes selected for update trainings. The regional officer concurred with these sentiments. Besides selection of trainees, some PMTCT providers indicated that they failed to learn some aspects when the sessions were delivered in English or when only a few trainees got to practically perform a skill during training. (Table 4, quote 2)

At all facilities, a culture of internal dissemination of new guidelines was reported. In this, staff who had returned from training reported to the rest of staff on what they learnt and shared any material they came with. Respondents explained that this was done during routine meetings like the daily clinical handover meetings at the district hospital and the weekly HIV service provider meetings at the private hospital and so only those who attended the particular meeting got to learn of the guideline updates.

Determinants related to the format and contents of the guideline documents

Format of the guideline documents

Once the guidelines reached the facilities, they were not always read because according to all respondents, guidelines written in English were difficult to comprehend for non-clinician cadres of providers. The national officers explained that there was a lack of finances to translate and re-produce translated copies. In addition, guideline documents that were perceived to be large and having a lot of text were considered unattractive to read. Instead, providers appreciated summarized forms of guideline like standard operating procedures (SOPs), flow charts or drawings. However, the national officers and the regional officer stated that funds lacked for the production and distribution of these summarized guidelines.

Content of the guideline documents

Regarding the guideline recommendations, their perceived complexity or ease of implementation was reported to be impeding and facilitating implementation respectively. The perceived complexity of WHO staging in CTC guidelines or use of capillary tubes to sample blood in HTC and PMTCT guidelines made providers avoid these activities. (Table 4, quote 3)

Table 4. Quotes form respondents

	Quote	Respondent
1	“...first the problem that is there is that the guideline are few, you can find that they come but they are not enough if you compare with the number of facilities that should have the guideline...”	District Officer
2	“Another thing I would say I did not understand properly is about the testing of the children, the DBS [Dry Blood Spot, for early infant diagnosis of HIV] procedure (shaking her head) is still difficult for me... At training, only two people got to practically do it as we watched. So since I was taught during the training I have not been able to do it so I am not sure if I get the DBS kits I would even be able to do it.”	Private hospital PMTCT
3	“R: You may think he (patient) is in (WHO) stage 1 when he is in stage 3... just that it is easy to miss the stages so it is a problem. So WHO staging is not as good as CD4 whose criteria are clear, from here to here the patient is eligible... Also, for WHO staging, you need more time to go through each stage and its diseases as you refer to the guideline...”	Private hospital CTC
4	“I: ... What makes you provide services according to guideline? R: confidence I: confidence, your confidence? R: Yes I: Can you explain to me that? R: Because whatever I do to the patient I am sure about it and that I can do it I: Ahaa. So what do you think brought on that confidence? R: Understanding and the training that I have.”	Public health centre HTC
5	“I think I can just say it is laxity (she laughs) are you recording also laxity? But let me just say the truth before God. That following up to test after three months in truth we have many things and may be in truth let God forgive us because we have not been keen on that... we have not prioritized it even when reagents are available...”	Public district PMTCT
6	“In this dispensary, [this respondent found this practice going on when she joined the facility] they told me in one seminar they were told they could invite partners of expectant mother by letters. So we do that and they come.”	Public dispensary PMTCT
7	“... at times providers used normal saline instead of the buffer. I had to tell them no, that cannot give you the correct results that we need. You are required to use that buffer which is specific for that test...”	Regional officer
8	“... so when we reach there, we give coaching and mentoring to all providers who give these services; for example, at a dispensary providers are not many so they can all be called and we give them coaching and mentoring about say PMTCT”.	District officer
9	“But also, at times, there are challenges of movement of providers who have been trained.so you find the service cannot be performed because the trained staff has been transferred to another facility.”	District Officer
10	“... I will counsel but I will not go to details because I look there are five other mothers waiting for me, I am hungry, time is finished and the mother is also tired so I don't go to details. When I see she has agreed to take the medication and she knows she will take it every day I end it there (she laughs).”	Public district PMTCT
11	“Aaah ...in truth there is a problem, for example about CTC... So when CTC client comes to pick medication, he comes into this same room. So to protect their privacy we make the outpatients wait outside there until that HIV client leaves the room... but the other patients suspect because HIV clients take a long time.”	Public dispensary's facility manager
12	“Sometimes the test for confirmation is the one missing and that too is a challenge... because you cannot test a patient when you don't have the confirmation test. What if the first test turns positive?”	Public health centre HTC
13	“Yes, they have the tests and they help us, for example these tests like Determine™, they run out and from the DMO they delay bringing more. But we are grateful that YYYY (FBO facility) usually help us. Even with drugs also... these ARVs and cotrimoxazole...”	Public dispensary's facility manager
14	“Lost to follow ups are many among the pastoralists. I think it's because of... it's because of education, they have not got enough education these pastoralists... maybe we could arrange to trace them but they move around. It is hard”	Public health centre HFM
15	“... especially people with awareness when you start counseling they tell you please stop the stories and give me my results. Don't go round, give me the results, I start treatment if am sick. So you find you are cut short.”	Private hospital CTC
16	“R: You find some patients agree (to join patient groups) but many refuse... you know these stigma things, they say that they fear being announced and prefer just coming to clinic to pick their medication.”	Public dispensary HTC
17	“... many mothers when you tell them that if you take these medications you will give birth to a child who is safe (uninfected), many mothers put effort to take the medication so that they save their babies.”	Public district PMTCT

Conversely, the new PMTCT guideline including a once-a-day fixed dose combination, which was considered easy to explain to mothers, made providers embrace it.

Determinants related to the health provider as user of guidelines

Individual characteristics of providers

Individual characteristics of providers influenced how the guidelines would be implemented. The commitment of facility in-charges and district co-ordinators was important in facilitating guideline implementation according to the regional officer. Providers indicated that having a positive attitude towards the guidelines, believing that the services are beneficial to clients and having confidence in their own abilities caused them to follow the guideline. (Table 4, quote 4)

According to coordinating staff and the public dispensary CTC provider, lower level of education made it challenging for lower cadre staff to comprehend guidelines. Coordinating staff also thought that lack of a reading culture among providers impeded proper guideline implementation. According to some PMTCT and CTC providers, laxity or disregard by providers of some guideline recommendations caused them not to re-test mothers who initially tested HIV negative for PMTCT at the district hospital. (Table 4, quote 5)

It emerged that providers sometimes got creative to ensure guideline activity or steps were implemented. For instance, an HTC provider in the private hospital explained how running out of buffer before test strips in the kit are finished made her change from using whole blood as required for HIV testing at the point of care, to using serum as is done for blood for transfusion whereby buffer is not required. At the public dispensary they sent the mothers to deliver letters to their male partners, inviting them to come for testing. (Table 4, quote 6)

This creativity was however sometimes harmful as was explained by the regional officer in Table 4, quote 7.

Support for providers

At all facilities and for all HIV services, providers described how they supported each other with the understanding of guidelines by seeking clarifications from each other and reminding each other of guideline requirements. They reported how facility in-charges helped out in actual implementation, in interpreting English guidelines, and in obtaining supplies when they ran out. The district officer and the regional officer indicated that they supported guideline implementation through supervision and coaching of providers. This was corroborated by providers at all facilities although sentiments were expressed by some providers that supervisors were more interested in the number of persons served than in circumstances under which services are provided. (Table 4, quote 8)

Determinants related to the organization: resources, patients flow and distance to district office

Management of staff

Staff organization was one feature within facilities that influenced implementation. For instance, deployment of trained staff to work at departments unrelated to the HIV services, unavailability of a staff trained in the required skill for CTC and PMTCT guideline activities like cancer screening and DBS sample collection, or transfer out of such staff also impeded implementation. (Table 4, quote 9)

Patient load

According to the national officers and the regional officer, increased patient load makes providers implement guidelines poorly and conversely less patient load allowed for better guideline implementation. For example, completion of registers by the health center's CTC provider, provision of comprehensive counselling by the PMTCT provider at the district hospital and HIV testing of all eligible patients attending outpatient services at the public dispensary were not done during busy times. (Table 4, quote 10)

Availability of necessary resources

Inadequacy of space to provide HIV services caused lack of privacy and confidentiality for clients and patients at all facilities. At the public dispensary, outpatient and CTC services were offered in the same room by different providers alternately. (Table 4, quote 11)

Facility-based staff explained that stock-outs of DBS kits, HIV test kits and medication completely halted the provision of services like HIV testing, early infant diagnosis and management of opportunistic infections. The reasons given for missing supplies were both internal and external to the facilities. Within facilities, HTC services were mostly affected, and the key reasons given by respondents included: running out of test-buffer before the accompanying test-strips were finished even though, tests cannot be used with test-buffer from another kit (testing strips plus accompanying test-buffer); misuse of tests by providers including stealing them for private use; and poor recording leading to under-reporting of tests done causing under-forecasting of supply needs. The external reasons related to inefficiencies of the medical stores department (MSD) resulting in stock outs of medications or DBS kits, delays in delivering available stock, or delivery of only a portion of the requirements for the HIV testing algorithm e.g. the HIV screening test kit without the HIV confirmation test kit. (Table 4, quote 12)

To cope with shortages of supplies, providers explained that at facility level, they prioritized which groups of clients to test according to facility plans e.g. blood donors in the private hospital, PMTCT mothers at the district hospital and symptomatic patients at the public health-centre and dispensary. They also borrowed supplies like ARVs and test kits from neighbouring facilities to ensure that services continued. (Table 4, quote 13)

Alignment of guidelines with facility objectives

Organizational factors that facilitated the implementation of guidelines included formal reinforcement of the guidelines by integrating their aims into facility priorities, as was reported for the district hospital. According to the facility in-charge there, it was a facility priority to maximize maternal and child health and therefore more staff was allocated to PMTCT, and testing for PMTCT was prioritized when test kits were in shortage.

Distance to district or regional office

The regional officer and district hospital in-charge stated that being near the regional or district medical offices made it easier to get support in guideline implementation and to receive guideline copies and supplies as soon as they were available.

Determinants related to the community's social-cultural context and institutional regulatory context

This section describes findings on the way social and cultural contexts of a community influence some community members' choices to co-operate or not for guidelines to be implemented. It also

addresses regulatory contexts that influence facility choices on specific guideline recommendations.

Socio-cultural context and guideline implementation

Providers at all public facilities and the private dispensary explained how the socio-cultural context influenced whether clients accepted the services offered at the facilities. This in turn determined if some guideline recommendations could be implemented or not. For example, having alternative explanations for being sick besides HIV infection, like being bewitched, caused some patients to refuse enrolment to CTC, despite a positive HIV test. Yet CTC guidelines require all patients testing HIV-positive to be enrolled. The pastoralist community was reported by providers to be highly mobile and patriarchal. Their nomadic existence caused them to miss scheduled CTC visits often and since their men had the last word, they could refuse their wives to participate in testing or treatment for HIV. The PITC guidelines recommend that patients attending health facilities for any outpatient service if not yet tested for HIV should be tested. However, according to providers their use of HIV services was hindered because of low levels of educational attainment and poor awareness about HIV. (Table 4, quote 14)

Refusals to cooperate with HIV services also happened for non-cultural reason. For instance, providers described that some patients especially men, refused to test for HIV in PITC or PMTCT. According to providers, the reasons given for refusal included that the men were not ready, they were busy or they had travelled. Regarding HTC implementation, the fear of stigma was thought by providers to be the real reason of men refusing to test for HIV in HTC or PMTCT and not being busy or travelling.

It also emerged from interviews with providers at the private hospital and the district hospital that tested clients refused post-test counselling claiming it took up much time and all the clients wanted were their results. (Table 4, quote 15)

According to all CTC providers, stigma or fear of it prevented patients from cooperating with some CTC guideline requirements like bringing medication bottles for pill counts, allowing HBC workers to visit them or joining patient support groups. The providers also indicated that the fear of stigma also made some patients to not disclose their status, even to carers, which providers felt puts carers at risk of being infected. (Table 4, quote 16)

Providers at the public health-centre and the district hospital stated that patients' lack of money to buy medication or to enrol in the community health fund (a government promoted insurance scheme) caused some patients to miss taking their daily prophylaxis medication as recommended by CTC guidelines, which patients had to buy since the free prophylaxis medication was no longer available at the public health-centre and the district hospital.

It also emerged that some patients reported doubts about the HIV testing expertise of providers in lower level facilities, and refused to accept their results or enrol for CTC, yet HTC guidelines recommend that patients who test HIV positive should be enrolled for CTC services. However, this was reportedly less common among pregnant women accessing PMTCT services who perceived the potential to protect their unborn babies as an important factor explaining their agreement to participate in HIV testing and treatment more readily. (Table 4, quote 17)

Regulatory context and guideline implementation

Regarding regulations, we found that Catholic institutions like the private dispensary could not offer family planning services as required by CTC and PMTCT guidelines because it was against

church doctrine. We also found that private facilities were not allowed by the district medical office to purchase supplies related to HIV services from other suppliers besides MSD and were required to wait for unreliable supplies from the district offices.

Discussion

This study has shown that planning for guideline dissemination was weak and that the English language, large text documents and perceived guideline complexity impeded guideline implementation. It showed that lower cadre staff were poorly prepared for and that the general weaknesses of the health system hindered guideline implementation. Stigma in this setting contributed to less demand for HIV services hence poor implementation of guidelines. A 2014 meta-ethnographic synthesis, which concluded that street-level bureaucrats (service providers) are affected by their sociopolitical context, working environments and their personal beliefs and values (Erasmus 2014), partly summarizes the findings of our study. To contribute to the global call to eliminate HIV, approaches to improve implementation of HTC, PMTCT and CTC guidelines in Tanzania must also be multifaceted, consistent with suggestions of Grol and Grimshaw (2003).

Our finding that planning for dissemination of guidelines was weak is in line with findings from the study conducted in south-western Tanzania which found the absence of structures to facilitate dissemination of breast feeding guideline to be a major barrier to implementation of these guidelines (Shayo *et al.* 2014). Although in the current study, a combination of approaches was used for guideline dissemination as advocated by Foy *et al.* (2002), their success was stifled by the absence of a clear strategy and budget for guideline dissemination. This seems to have been worse for HTC guideline as we found that no facility had the guideline documents, yet HTC is a core service in the prevention and control of HIV. This is because through HTC, diagnosed patients can be linked to both CTC and PMTCT services as required. A Mongolian study concluded that comprehensive and rigorous planning for dissemination and implementation of guidelines is crucial for increased likelihood of implementation of diabetes and hypertension guideline (Chimeddamba *et al.* 2015). This could also apply for improvement of HIV guideline implementation in our study setting.

Once the guidelines reached the intended users, we found that the use of the English language, guidelines in large text documents, and perceived complexity of the guidelines impeded implementation just like was found in the breast feeding study from south-western Tanzania. Moreover, a systematic review found that less complexity of decision making was associated with compliance with guidelines (Grol and Grimshaw 2003). Although lack of funds to produce translated or summarized forms of the guidelines was reported, it was not clear why the limited funds available could not be used to produce Kiswahili guidelines.

Guideline users have also been referred to as street-level bureaucrats who have some discretion to make choices among possible courses of action during service provision, allowing them to translate policy or guidelines through their practices and interactions with clients (Lipsky 1980; Gilson *et al.* 2014). In our study task sharing of HIV services to non-clinician cadres of health providers (Munga *et al.* 2012) has created a situation whereby lower cadre staff like medical attendants can provide HIV services including prescription of ARVs and monitoring of patients' progress, as we found in the public dispensary. Task shifting therefore also shifts the discretion to make choices about guideline implementation to lower

cadre staff in different working environments. This means that approaches to improve guideline implementation by these cadres should take into consideration the characteristics of these specific users and include adaptation of guideline dissemination methods such as training approaches to ensure that the language used and the way the material is presented is targeted to their level of education and their language skills. It also requires additional training of these providers so as to assure that they are equipped with skills to deal with different socio-cultural circumstances.

Features of the implementing organizations that influenced the implementation of guidelines in this setting reflect the general weaknesses of the health system which affects the implementation of not only HIV guideline. For instance, management of providers, stock out of supplies needed for implementation like HIV test strips and ARVs and inadequacy of working space that compromised privacy and confidentiality of patients. Ongoing health system strengthening efforts can contribute to solving these common problems for example, improvement of the information systems at Medical Supplies Department to improve ARV delivery (USAID 2015) and improvement of infrastructure and patient flow at facilities to respectively improve privacy and to contribute to reduced workloads (Bryan *et al.* 2010, Economist Intelligence Unit 2012, Alamo *et al.* 2013; MoHSW 2013a).

Efforts to create demand for HIV services must address the specific socio-cultural barriers to using HIV services among the target community. In a 2012 HIV survey, 75% and 60% of Tanzanian women and men, respectively, expressed a stigmatizing attitude towards HIV patients (TACAIDS 2013b). Research indicates that approaches to tackle stigma require interventions on policy, societal, health system, and individual levels (Pulerwitz and Bongaarts 2014). Current approaches to tackle stigma have largely focused on knowledge, attitudes and responses of individuals (TACAIDS 2013a). According to Lorentzen *et al.* (2003), there is need to re-orient these approaches towards more emphasis on the broader political, social, cultural, and economic forces that encourage the production and maintenance of stigma. This implies dealing with the social structures and power relations that allow stigma to prosper which can happen only if stigma is viewed as a phenomenon that is linked to group processes and functioning, rather than viewing it as an individual phenomenon (Lorentzen and Morris 2003). This is a view which Tanzania policy makers could adapt when strategizing against stigma. The findings need to be considered in light of the limitations of our study, which include the fact that we could only interview one district HIV coordinator out of two from the two districts which could have led to some selection bias. Furthermore, we did not include the perspectives of service users, nor did we explore how providers coped with the challenges related to the socio-cultural context. However, ongoing qualitative work in other ALPHA sites where gaps in policy implementation were observed should shed light on these issues. In addition, we did not observe services to see if guideline were used, but relied on provider reports which may be prone to social desirability bias. On the other hand, our study included providers from health facilities of different levels and ownership, which provided a broad range of perspectives. Although we sampled respondents from only two rural districts, the inclusion of coordinating staff from national level provided a more national outlook of our findings. To minimize the influence of individual researcher's pre-existing biases on the interpretation of information collected, two local researchers were engaged in data collection and codes for analysis were developed by two researchers. The data collected were discussed daily among the different researchers collecting data. The inclusion of researchers with different

backgrounds including epidemiology, sociology and biomedical sciences in data interpretation and review of reports also minimized possibility of bias introduced by perceptions of any individual researcher.

Conclusion

Although we found factors that facilitated HTC, PMTCT and CTC guideline implementation, there were also a myriad of barriers to the implementation of these guidelines in this setting. To contribute towards the three zeros, changes are necessary in the approaches to guideline dissemination especially to lower level facilities regardless of their ownership. Designing of a specific dissemination strategy along with a budget to fund the strategy is important for improved dissemination of guidelines. While appreciating the fact that national guidelines cannot address specific barriers for the many different settings in the country, it is important for health providers and their supervisors to be prepared to effectively address these specific barriers in the settings they work in. Also, addressing the general weaknesses of some health system elements like supply chain management, human resource for health management and health service financing mechanisms would facilitate guideline implementation for HIV and probably other chronic diseases.

Ethics

Ethical approval was obtained from the institutional review board of the Ifakara Health Institute (IHI) in Tanzania and the National Institute for Medical Research's ethical committee (NIMR/HQ/R8.e/vol I/351 (12/6/2015)). All study participants provided informed consent.

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Conflict of Interest statement. None declared.

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