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CASCADED CLINICAL MENTORING IMPROVES HEALTH WORKERS SELF-EFFICACY IN PROVISION OF INTEGRATED HIV CARE IN RURAL HOSPITALS IN KENYA
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ABSTRACT

Objective: To evaluate cascaded clinical mentorship strategy on access and health-worker's self-efficacy in delivery of integrated HIV services.
Design: A cross sectional survey study design.
Setting: Government health facilities in the Coastal region and City of Nairobi, Kenya. Participants: Nurses and clinical officers who were recipients of cascaded mentorship. Intervention: Training of volunteer health-workers on mentorship and the HIV care package by a team of master mentors followed by support to carry out mentorship among fellow health-workers.
Outcome measure: Access to HIV services, and health-worker self-reported efficacy in delivering integrated HIV care services based on an anonymous standard self-administered tool that evaluated 9 domains of HIV care.
Results: There was an exponential increase in mentorship services, 126 volunteer health-workers were trained, and they formed 22 multidisciplinary District teams who extended mentorship to 231 health facilities. In the 33 months a total of 5503 mentor visits and 7724 mentoring sessions were made. The evaluated 150 health workers self-reported significant improvement in all 9 domains of HIV care compared to baseline ($p < 0.001$). Health-workers were exposed to a mean of 6 mentor-ship sessions. On controlling for region and cadre of staff, number of mentor-ship sessions were significantly associated with increased competence in 7 of 9 fields ($p< 0.01$). Compared to volunteer mentors, mentorship and site visits by master mentors were five and twice more costly respectively.

Conclusions: Cascaded HIV mentorship increased staff self-efficacy and access to HIV treatment services. The impact of this cascaded mentorship on patient outcomes should be evaluated.

INTRODUCTION

The goals of the Kenya HIV AIDS program are aligned to the UNAIDS 90-90-90 goals which are aimed at identifying 90% of HIV infected individuals, link 90% of them into care, and provide ART so that 90% are virally suppressed[1]. In order to achieve these goals, HIV services should be provided at facilities nearest the population such as health centers and dispensaries. Health workers need to be competent in HIV counseling and testing (HCT), HIV related health education, adherence counseling, ART therapy and its' monitoring and management of the related commodities and effective integration with other health services. Challenges to maintaining these competencies across the health services, include among others, rapid evolution of guidelines requiring regular updates for the staff and task-skills mismatch further aggravated by task shifting. Clinical mentorship a system of practical training and consultation that fosters ongoing professional development to yield sustainable high-quality clinical care outcomes may help bridge these gaps.

In 2008 WHO recommended that countries develop HIV mentorship services, which would include an induction process for potential mentors, familiarizing with simplified, standardized national guidelines and tools, and updates on the same. In addition, there was the need to strengthen mentors' adult teaching skills, self-awareness, effective communication and facilitation skills[2]. There was a guidance that mentors are linked to a national system for monitoring the mentorship program with the understanding that sustainable national mentorship cannot rely on 'external' mentors whether expatriate or national experts.

In Kenya, the original mentors were, doctors, nurses and pharmacists who had refined their skills from observation and practice during the conduct of large HIV epidemiologic and clinical studies. Mentorship facilitated introduction of HIV services and the overall strengthening of delivery of the healthcare package but failed to be sustained over-time because of the constant re-deployment of mentored staff and especially nursing cadre, the most populous professional cadre within the health services and whom a lot of responsibilities were bestowed. The model of off-site mentorship was very expensive since mentors were essentially being hired as consultants and further to this there was limited contact time between mentors and mentees. Although ART services were provided by a multi-disciplinary care team, the structure of the services had created silos where HIV care functions as remote out-posts with huge challenges of integration into the rest of the services. Only a few health workers received training on HIV care, further increasing the isolation of these services from the rest of healthcare system.

As part of the Aphia-plus Service Delivery Project-Nairobi and Coast Provinces, NARESA a public benefit non-governmental organization (NGO) and a member of the consortium, was tasked to provide technical support for the integration of HIV care services within the public health facilities. The team developed a within the District system of mentorship supported by external master mentors and referred to as cascaded mentorship. The hypothesis was that developing HIV mentorship skills within the District would demystify it and increase likelihood of sustained quality services and

scale-up. This paper describes the experiences with this cascaded approach to mentorship.

MATERIALS & METHODS

Intervention: The intervention was HIV mentorship training of volunteer health workers at District hospitals by a team of master mentors and then formation of teams of mentors to support HIV services within their own facilities and the health-centres and dispensaries in their region. The *master mentors* were a multidisciplinary team of professionals with
extensive knowledge of HIV and experience gained by working in HIV research projects or at program planning at National level and included a Pediatrician, Epidemiologist, Obstetrician/Gynecologist, HIV medicine specialists, Pharmacist, Nutritionist, Nurse counsellor/clinical psychologist, monitoring and evaluation expert and laboratory technologist.

Volunteers to be trained on mentorship: Health workers at District hospitals were requested to volunteer to be trained to be mentors to support the HIV integration. Medical officers who had recently completed internship in the facilities were identified as the entry point to disseminate the information and to encourage different cadres to volunteer. The volunteers were then invited to the first meeting where the objectives were outlined which was training to mentor fellow health workers in their own institution to improve service delivery. The volunteer mentors were then expected to dedicate 4 days a month to do a mentorship out-reach to facilities within their catchment areas to the Health Centers (HC) and dispensaries. Previous experience in HIV care was not a requirement.

***Mentor training*:** Master mentors provided the volunteer health workers with progressive training, mentorship, and coaching. Each training session tackled a key integrated HIV care component and mentorship skill based on existing resources [3,4]. At the start of the training the 4th edition of the Kenya Guidelines on anti-retroviral therapy had just been issued and these formed the core training materials and trainees were provided with electronic copies as resource materials[5]. This was the first time that a large number of the health workers were seeing the guidelines.

The key mentorship topics included (i)introduction and rationale of mentorship, (ii) basic (iii) knowledge and skills in mentorship, (iv) roles and characteristics of an effective mentor and components of the mentorship process. Identification of HIV infected individuals was the first topic to be tackled. The master mentors emphasized the need to offer HIV testing to all the people accessing services in the facility as well as ensuring the recommended testing points in the prevention of mother-to-child transmission of HIV (PMCT) follow-up are carried out. There was also discussion on ensuring commodity security and documentation.

During the training, Ministry of health policies were disseminated, and discussion focused on how to realize the same in the facility. Before leaving the first training, the team from each of the facilities shared out responsibilities according to their area of deployment. For example, the medical records officer was to follow-up on documentation while the laboratory technologist was to ensure kits were available and even coach others on how to do the rapid testing.

***Mentorship process*:** The newly trained mentors were requested to go and share their experiences within their facility and to conduct a needs-assessment to identify the gaps in their program and which would be corrected through the mentorship activities. In all the sites the first activity was around

identification of HIV infected individuals (men, women, youths and children). The mentors were then to mentor individuals within their facility to ensure provider-initiated HIV testing and counselling (PITC) was being offered at every opportunity especially in maternal child health services, out-patient and in-patient medical and paediatric wards followed with appropriate care for those identified with HIV.

***Mentorship Sharing Forums*:** The mentors from the different Districts were regularly brought together for a sharing forum. Each team was requested to develop a short report of their activities and summaries of challenging cases to be discussed at the sharing forum. Every forum has had a key theme to build mentorship skills and HIV care skills such as anthropometry and its role in nutritional assessment in which there would be practical demonstrations on how to do anthropometric measurements and the interpretation of the findings.

***Site Visits by Master Mentors to Support Mentorship*:** Each didactic training session was followed up with coaching approximately 2 weeks later to allow mentee time to try out the new skills. At this point the master mentor reviewed the minutes of the team meeting and the needs assessment. Master mentors also observed the mentee conduct mentorship and followed it up with tips on how to proceed as well as additional factual information. As the mentors gained experience, they then began to reach out to the cadres in lower level facilities. The master mentors conducted field visits to support the District level mentors, during which challenging cases were discussed. Topics for mentorship were determined by the felt needs of the health workers or the observations of gaps by the mentors. Master mentors also worked as a team carrying out joint supervision visits.

***Off-site support*:** The District Level mentors were requested in their monthly reports to include a description of cases they had seen. In-put into the further management of the cases was then provided by the master mentors. Master mentors were available on phone and on email to the District Level mentors.

Grand Rounds: The master mentors facilitated grand rounds during which unique or difficult clinical cases selected by the sites were discussed. These were attended by all members of the facility who were available.

Evaluation of the cascaded mentorship

***Analysis of topics covered during mentorship*:** The monthly reports of all the District mentors were digitized and the mentorship topics on each visit identified and coded to so as to provide a map of the topics covered.

***Analysis of health-worker self-efficacy in providing integrated HIV services*:** After 33 months of follow-up, health workers who were recipient of the cascaded mentoring were requested to self-evaluate their knowledge and skills before and after mentoring in 68 competencies distributed in 9 broad areas; (i) establish therapeutic relationships (ii) clinical clerkship (iii) HIV related health education; (iv) laboratory monitoring of anti-retroviral drug use, (v) Knowledge of HIV (vi) use of standard monitoring tools (vii) diagnosis and treatment of common HIV co-morbidities (viii) HIV care specific to women and (ix) HIV care specific to children, all based on the Kenya ART guidelines. A four point Likert scale whose responses were (1) don't know how to do this task, (2) performs task with support, (3) extremely confident and (4) can teach this task to others, was used for the evaluation. Figure 1 shows the cascaded mentorship and the individuals who were the target for this evaluation.

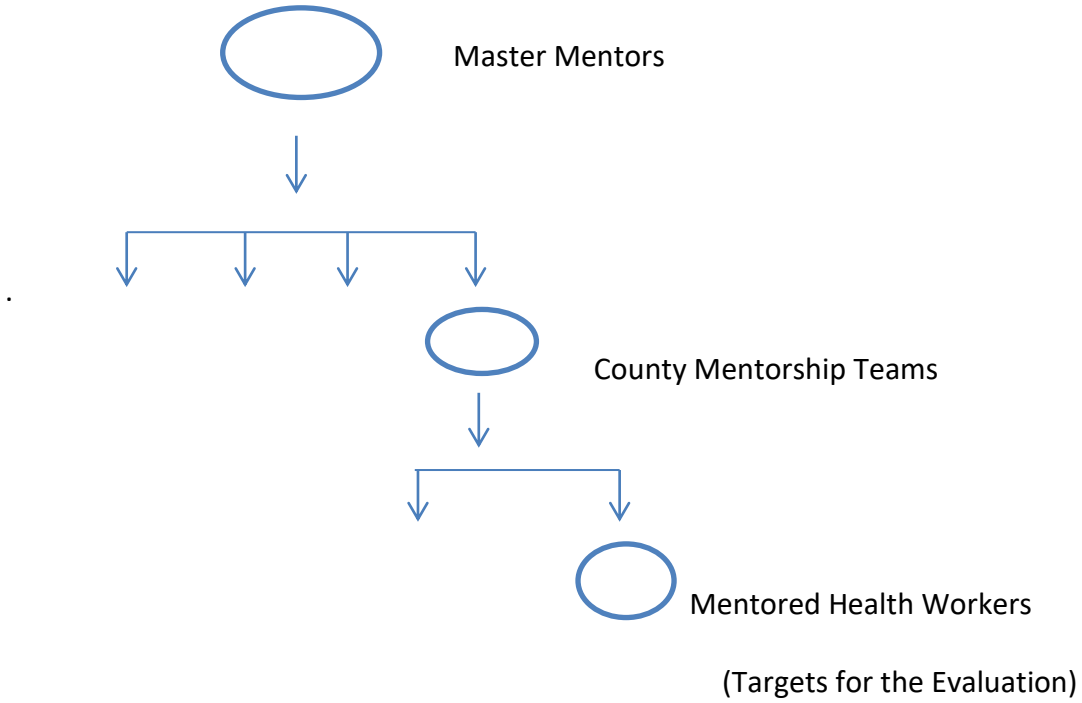

Fig 1: Mentorship Cascade

Data analysis: A frequency table was made of the number of facilities mentored and stratified by region and level of the facility. Similarly, a frequency table was developed of the mentorship topics covered by various mentors and the frequency of delivery of the topic. Assuming that each topic was presented at least once per facility, the topics were divided by the number of facilities to give mean frequency of delivery per facility. Health worker mean Likert scores before and after the period of mentorship and the mean difference were computed. A single sample t-test was used to determine whether the mean difference was significant. A step-wise regression analysis was carried out to determine the effect of cadre, region and mentorship sessions on the self-reported efficacy in the nine areas of evaluation. A second stepwise regression analysis was carried out with only the variables that were significantly improving the model. The cost of the training and mentorship was computed. The allowable costs were transport, accommodation and out-of pocket expenses for all the mentors.

RESULTS

Altogether 15 master mentors were able to mentor 126 volunteers to become District level mentors who then formed 22 multi-disciplinary District HIV mentorship teams as shown in table 1. These mentorship teams reached 231 health facilities including 109 dispensaries, 104 health centers, and 18 District and sub-District health facilities. In the 33 months, 5503 mentor visits and 7724 mentoring sessions were made. During the 33 months there was a total of 1,039 master mentor contacts with the volunteer health workers who were trained as mentors and this included 399 field visits while the other were contacts during team training. Overall 19% of the visits and 7% of the mentoring sessions were by master mentors.

Table 1

Distribution of mentorship teams and number of facilities that were mentored

Region	Number of County Mentor teams	Level 2 facilities mentored (dispensaries)	Level 3 facilities mentored (Health centers)	Level 4 and 5 Facilities mentored Sub-District and District hospitals	Total facilities mentored
Nairobi	11	18	48	2	**68**
Taveta	3	11	11	2	**24**
Mombasa	2	12	12	3	**27**
Lamu	1	12	6	2	**20**
Kwale	2	15	12	4	**31**
Kilifi	3	41	15	5	**61**
Total	22	109	104	18	**231**

The most frequently taught topics were on record keeping (17%) followed by topics on anti-retroviral therapy (ART) (14%), early infant diagnosis (14%), nutrition assessment and counselling (12%), and HIV specific clerkship (10%) as shown in table 2. Less frequent topics were commodity management (9%), screening for tuberculosis and other opportunistic infections, viral load testing and health systems management 7% each. The areas of least concern were the routine maternal newborn services, and HIV testing.

Table 2

Distribution of the mentorship topics provided to health workers at their workplace

Mentorship Topics	Number of sessions N=7578	Mean number of sessions per facility	% of total sessions
Registers (proper documentation and abstraction of service delivery statistics	1296	5	17%
Anti-retroviral therapy (ART) [(follow-up, drug side-effects, paediatric and adult initiation, post-exposure prophylaxis (PEP), treatment readiness, prevention of mother-to-child transmission (PMCT) and ART in anaemic women]	1078	5	14%
Early infant diagnosis (sample collection, packaging and dispatch, retrieval of results)	1061	4	14%
Nutrition (assessment and counselling)	947	4	12%
HIV specific clerkship (psychosocial assessment, adult and paediatric staging, clerking and physical examination, and patient health-worker relationships)	733	3	10%
Commodity management (HIV test kits, ARV's, tools, guidelines)	682	3	9%
Screening for TB, use of Isoniazid (INH) preventive therapy and screening for other OI's	500	2	7%
Viral load (sampling, storage of samples and interpretation of	498	2	7%

results)			
Health systems [integration of services, on job training (OJT), Comprehensive care clinic (CCC) set-up, client flow, organization of HIV testing within the facility]	494	2	7%
Maternal new-born child health (MNCH) services [child growth monitoring, family planning, anaemia in pregnancy and immunization]	172	0.7	2%
HIV testing (sample collection, testing and interpretation of results)	117	0.5	2%

The 150 nurses and clinical officers who completed the self-assessment reported that they received a mean of 6 mentor-ship sessions. The mentored health workers self-reported significant improvement in all 9 domains compared to baseline ($p < 0.001$). After controlling for region and cadre of staff, number of mentor-ship sessions was significantly associated with increased competence in 7 of 9 fields ($p< 0.01$). The proportion of individuals who didn't know or need support to carry out a task (Likert scores ≤ 2) declined while the proportion who were confident in providing services increased after the mentorship process as shown in figure 2. Overall there was a $\geq$ 25% increase in mean Likert measure of self-efficacy in 6 (66.7%) of the 9 areas of evaluation, and these included clerkship skills, patient education, investigations, knowledge of HIV/AIDS documentation, and care specific to women and children as shown in figure 3.

Fig 2: Likert Score before and after mentorship

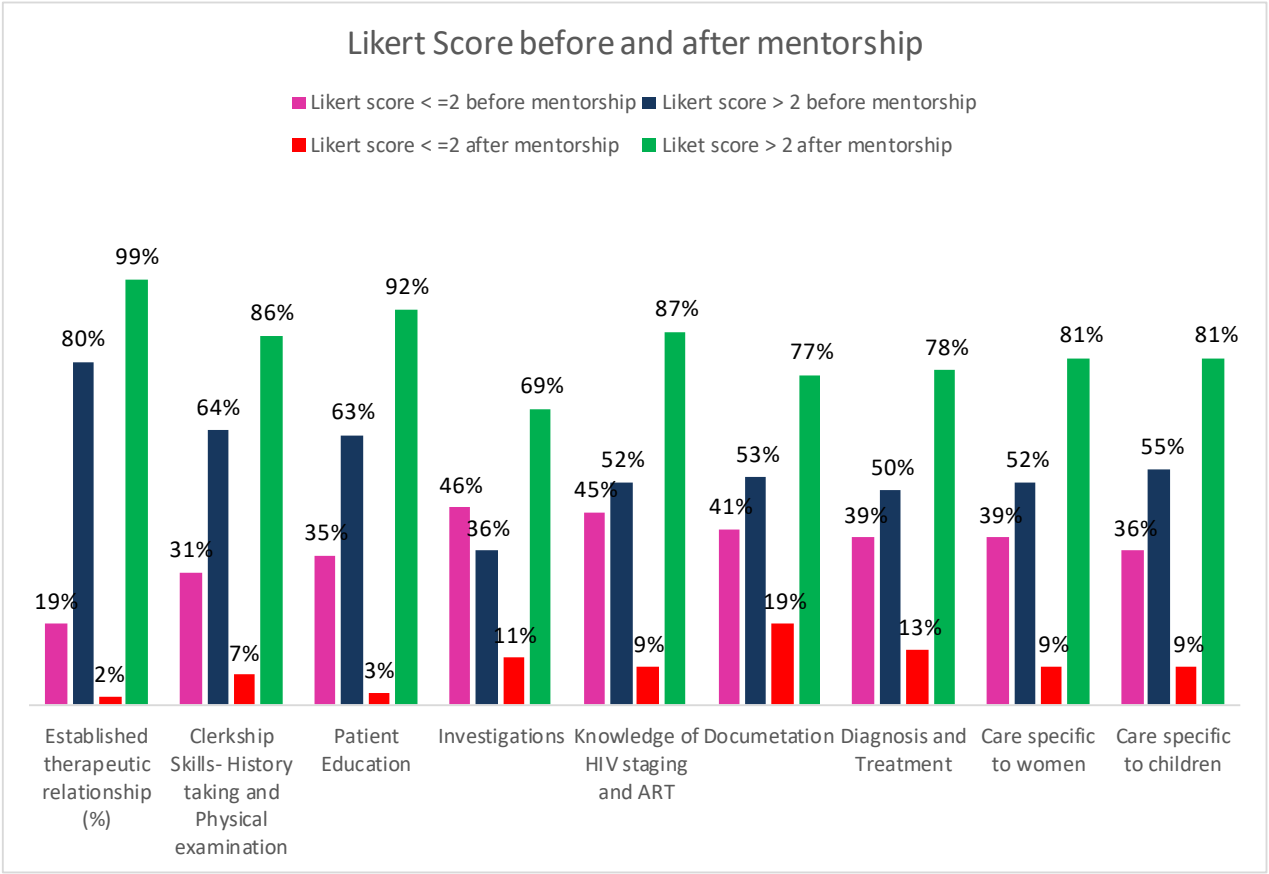

Figure 2 shows that the proportion of individuals who had Likert scores < 2 decline as shown by pink bars representing before the mentorship and red bars after the mentorship. The individuals who were confident in providing services increased as shown by the comparison of the dark blue bars representing the period before and green bars after the mentorship.

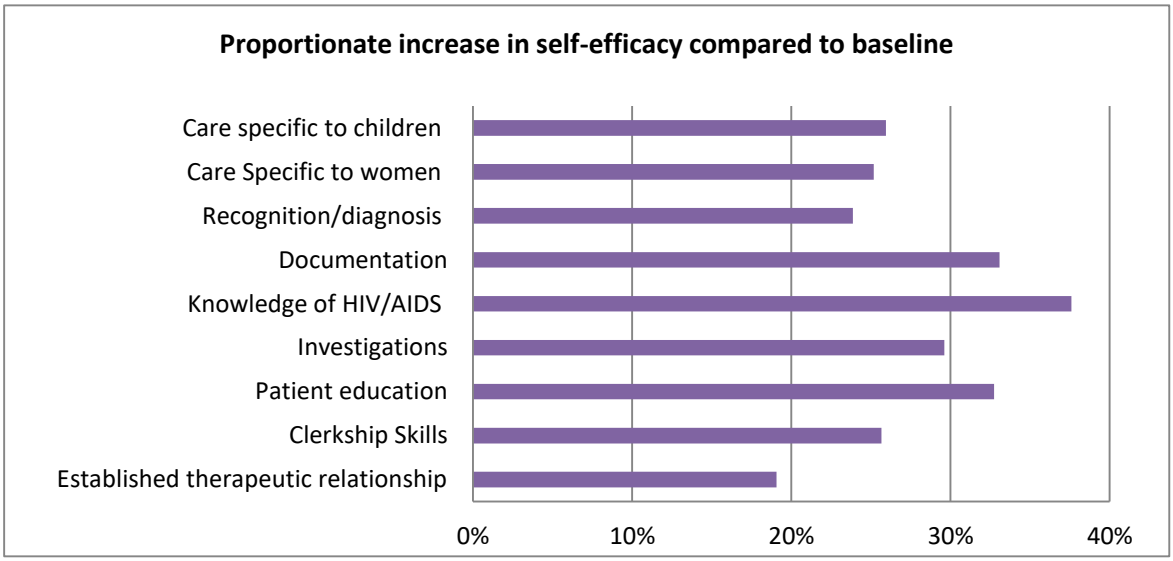

Figure 3: Proportionate improvement in self-efficacy

The overall cost of training 126 District mentors including transport, accommodation and out-of pocket expenses was $4,169 US per mentor trained or $2,207 US per facility mentored. On average, Master mentors costed $340 US per mentorship topic and $189 US per field visit while District level mentors costed $104 US per visit, and $67 US per mentorship topic. Master mentors costed 5 times per mentorship topic and 1.7 times more per visit compared to District mentor.

DISCUSSION

This study has evaluated the effectiveness of a cascaded mentorship strategy to scale-up HIV services and self-reported efficacy of health-workers in providing an integrated HIV care services in urban and rural health facilities. The study shows that highly qualified experienced master mentors are able to build a multi-disciplinary team of regional mentors who effectively mentor other health workers. The cascaded mentorship enabled efficient and timely strengthening of the HIV services in many facilities. A team of 15 master mentors were able to create 21 multi-disciplinary teams of mentors who, within a period of just over two years, were able to provide mentorship to 231 health facilities covering 6 Counties in Kenya.

The selection of mentors departed from the current WHO guidance which suggests considering mentors for whom mentoring is a mainstreamed function in their organization[2]. The program worked with volunteers, some of the heads of departments and other who were regular service delivery staff. The mentorship task challenged them to be knowledgeable and to ensure that their own facilities were working efficiently. Since they did not have the label of HIV experts, they became role models to other health workers who had considered HIV care a complex task. There were challenges faced at the start of this program in selection of volunteers. In the Coast region the mentors were all volunteers. In

the Nairobi region, the health management teams were initially skeptical, and which then delayed start up in the region by 6 months until when it was observed that the model was working well in the Coast region.

The District Hospital multi-disciplinary HIV mentors were effective in improving the self-efficacy for various competences among health-workers at service delivery point. The study shows that the health workers had gaps not only in the HIV related knowledge but also in the skills required to achieve the various tasks in HIV care. Only 2 of the nine areas that were evaluated had a mean Likert score of ≥ 3 at baseline, that is a sense of confidence that they are able to perform the tasks or even train others. After mentorship the Likert score was > 3.5 in all but one area demonstrating that health-workers felt confident in providing the service and mentoring others on the same. The area of documentation was the only one that failed to improve significantly, probably because of the frequent changes and ambiguities in the required documentation during the implementation period. The process of mentorship helped to clarify the ambiguities in the tools sent to the field and to update as the changes were made. Master mentors were able to provide feedback to the national level officers on the challenges experienced in the field.

Mentorship is able to effectively support decentralized delivery of HIV care, antiretroviral therapy, and strengthen the application of classroom learning to clinical care. The mentorship provided, at the point of service delivery relevant knowledge, skills and practical demonstration. The cascaded mentorship built the capacity of first- and second-level providers to manage unfamiliar or complicated cases. In addition, mentorship improved the motivation of health care workers, by providing effective technical support. The lower level facilities are designed to provide acute care while HIV requires longitudinal follow-up. Through mentorship we were able to foster decentralization of chronic care services that required multi-level continuity and supported it with the cascaded mentorship. During the feedback forums, members of the DHMMHT demonstrated a high level of commitment and enthusiasm. *''We must clean up our house before we go to teach others''* was a common statement during these forums. The mentors expressed their appreciation of the process because they were able to build relationships with fellow health workers at the lower level facilities, a process that greatly improved the up and down referral. The multidisciplinary team approach was invaluable because it allowed the mentors address basic inadequacies beyond the HIV related issues. For example, the pharmacist were able to improve the standards of drug storage and handling and to implement standard operating procedures. The laboratory technologists were able to support laboratory safety, quality of sample handling and review analytical procedures. The DHNNHT felt there was an increase in collaboration and functioning as a District health service.

Ambitious commitments have been made to end the HIV epidemic. Our ability to sustain these goals will be dependent on the skills of the health workers and the ability of the health systems to sustain commitment and enthusiasm necessary to achieve the daily tasks and to solve the local problems. Mentorship is a useful management tool to achieve this goal and has the potential for bridging the access, equity and quality gaps in health services. There is need for further studies to determine whether this model of cascaded mentorship improves the quality of services delivered to the patient.

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