

Human resource aspects of antiretroviral treatment delivery models: current practices and recommendations

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Purpose of view

To illustrate and critically assess what is currently being published on the human resources for health dimension of antiretroviral therapy (ART) delivery models.

Recent findings

The use of human resources for health can have an effect on two crucial aspects of successful ART programmes, namely the scale-up capacity and the long-term retention in care. Task shifting as the delegation of tasks from higher qualified to lower qualified cadres has become a widespread practice in ART delivery models in low-income countries in recent years. It is increasingly shown to effectively reduce the workload for scarce medical doctors without compromising the quality of care. At the same time, it becomes clear that task shifting can only be successful when accompanied by intensive training, supervision and support from existing health system structures.

Summary

Although a number of recent publications have focussed on task shifting in ART delivery models, there is a lack of accessible information on the link between task shifting and patient outcomes. Current ART delivery models do not focus sufficiently on retention in care as arguably one of the most important issues for the long-term success of ART programmes. There is a need for context-specific re-designing of current ART delivery models in order to increase access to ART and improve long-term retention.

Keywords

antiretroviral therapy delivery models, human resources for health, retention in care, task shifting

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Introduction

Antiretroviral therapy (ART) delivery models have many dimensions, each allowing for a wide range of variable aspects. Thus, we could characterize them by their use of human resources for health (respective roles and responsibilities of medical doctors, nonphysician clinicians, nurses, community health workers, expert patients, etc.), the intensity of their laboratory use (variety and frequency of tests, such as CD4, viral loads, etc.), their degree of decentralization (hospital-based, health centre-based, home-based, etc.), the frequency and length of appointments both during the initial and the long-term follow-up phases, and the methods and intensity of patient support and, particularly, whether peer support and active defaulter tracing are being done.

All of these aspects have effects on the resource intensity of an ART delivery model, and many of them are inter-related. There exists a wide variety of ART delivery models, even in low-income countries (LICs), and in this study we decided to focus on the use of human resources for health (HRH) and on retention in care as two critical issues especially for LICs with high HIV/AIDS burdens.

Use of human resources for health in antiretroviral therapy delivery models and its relation with scaling-up

In many settings in LICs, highly specialized ART delivery models, largely copied from high-income countries, are still being used. They are based on specialized physicians and intensive laboratory monitoring. Over the last couple of years, a number of studies have shown that ART scale-up to high coverage levels in LICs with severe HRH constraints is not possible with this model, as it would absorb all or even exceed the entire available stock of qualified health workers in these countries [1,2–5]. As a response to the shortage of qualified staff, many field projects adjusted their ART delivery model by delegating certain tasks from health workers with higher training levels to those with lower training levels [6–10]. Previous and recent experiences with the delegation of tasks in non-HIV-related services have shown that performance and quality of care by mid-level cadres can be equivalent to that by high-level cadres and that their use has a positive effect on access to care in rural and peri-urban communities [7,11–13].

The 'public health approach' to ART delivery advocates a simplified approach using standard guidelines, less intensive laboratory monitoring and task shifting [14,15]. The national ART programme in Malawi is a well known example, with its minimal laboratory monitoring and quite simplified protocols [6]. Task shifting is widely promoted as one strategy to overcome the HRH bottleneck, further propelled by the launch of the WHO policy guidelines on task shifting in January 2008 [16*]. It involves 'the process of delegation in which tasks are moved, where appropriate, from more to less specialized health workers' [15], through the entire spectrum from the physician at the one end and the nonprofessional health worker at the other [14]. Experiences with task shifting in ART projects and national programmes have been described in several recent publications with some focusing on task shifting among health professionals and to nonprofessionals [8,10,17*,18,19,20**,21,22] and others only on task shifting to lay providers or community health workers [9,23–26].

The amount of peer-reviewed papers on task shifting for ART since the beginning of 2008 (the cut-off point for our literature review) is limited and we can look in more detail at only a handful of papers.

We found two conference abstracts with rigorous evaluations of ART programmes using task shifting. One is a retrospective cohort analysis of patients initiated on ART in a nurse-based decentralized ART programme, supported by Médecins sans Frontières (MSF) in Lesotho [27]. In this programme, nurses were empowered to assume high levels of clinical responsibility, including initiating ART. Lay counsellors provided essential support for HIV services. The 12-month outcomes are described as highly satisfactory in terms of mortality (9.3% for adults and 5% for children) and loss to follow-up (LTFU) (2.5% of adults and 2% of children). At 24 months, 80% of adults remained in care. According to the authors, the 2-year outcomes of this programme 'provide further evidence that HIV/AIDS care and treatment can be provided effectively at health centres, validating several critical areas for task-shifting that include nurse-initiated and managed ART for adults and children and lay counsellor-supported testing, adherence, and case management' [27].

The other is a cluster-randomized trial from Uganda comparing the impact of home-based HIV care (HBC) with facility-based HIV care (FBC) on virologic failure and mortality [28]. In HBC, support, monitoring, and drug delivery was done monthly in the home by lay workers and patients only attended clinic 6-monthly for routine evaluation. Eight hundred and fifty-nine patients (22 clusters) were randomized to HBC and 594 (22 clusters) to FBC. The authors report 'excellent outcomes in both facility and home-based care' after 4 years with 34

(2%) LTFU (20 HBC, 14 FBC) and a mortality of 6.28 per 100 person-years [95% confidence interval (CI) 5.24–7.53] in HBC and 6.48 (5.20–8.07) in FBC. Virologic failure was observed in 13.6% in HBC compared with 13.5% in FBC and 66% in HBC and 64% in FBC were followed-up with undetectable plasma RNA at the final visit [28]. The authors conclude that 'complex treatments in Africa can be delivered effectively nearer to patients' homes without frequent support from clinical staff' [28].

Two ART projects in Zambia have published their experiences with task shifting. In the first, Sanjana *et al.* [29] describe the role of lay counsellors in HIV counselling and testing services. In the second, Morris *et al.* [30] illustrate the implementation of a comprehensive task-shifting programme for ART among the existing health professionals and community-based health workers. The latter is of more interest because the comprehensive task-shifting programme is a real modification of the doctor-based ART delivery model. In contrast, the use of lay providers for HIV counselling and testing is an already widespread strategy for scaling up counselling and testing services and may co-exist with a very doctor-based ART delivery model. Morris *et al.* describe how the design of a context-specific ART delivery model needs to be both reactive and proactive. Reactive in the sense that the design incorporates those aspects of task shifting that many of the ART delivery sites in sub-Saharan Africa have already implemented for coping with serious shortages of highly qualified staff, assuring by additional training that the quality of services is not compromised by this practice. Morris *et al.* describe how this was done in the case of task shifting from medical doctors to clinical officers. Clinical officers had already taken over several tasks originally reserved for doctors, without having been trained for these. Thus, the project focussed on training clinical officers in their new tasks, including the assessment of patients for eligibility for ART, the initiation of ART, and the monitoring of outcomes. The project then proactively started with further task shifting from clinical officers to nurses and from nurses to community health workers.

In the results, the authors show that task shifting made it possible to rapidly increase patient volumes without compromising the quality of ART services, which was measured by reviewing the quarterly clinic performance reports. Several basic indicators of clinical care performance improved between June 2005 and December 2007, such as proportion of patients on ART who had repeat CD4 cell counts ordered at appropriate time (raised from 82 to 95%), who had baseline alanine aminotransferase and baseline haemoglobin tested (raised from 50 and 63 to 78 and 82%, respectively), who were given pneumocystis carinii pneumonia prophylaxis (raised from 29 to 79%), and who had had a clinical review done in the past 3 months (raised from 79 to 83%). Only the proportion of

patients with baseline CD4 cell count decreased slightly from 89 to 81% [30].

Yet, they also acknowledge that the training and mentoring for task shifting was very time-consuming and that the project used a lot of resources. The last two points confirm what others have also emphasized, namely that task shifting, particularly to lay providers, is not a cheap solution and can only be successful if embedded in good training and supervision structures [17,24,31,32].

Van Griensven *et al.* [22] also highlight these aspects in their article on a successful task-shifting experience with ART for children in two government health centres supported by MSF in Kigali. In Rwanda, HIV/ART care had essentially been provided by medical doctors, with nurses only playing a supporting role. This reliance on medical doctors was even more pronounced in paediatric HIV care, as this was believed to be more complicated.

In this situation, a comprehensive task-shifting programme was implemented in which nurses were trained to take over many of the tasks originally reserved for medical doctors, including the interpretation of laboratory tests, the assessment of ART eligibility, and ART initiation of uncomplicated clients. To avoid overloading the nurses, most of their traditional tasks were taken over by new or reinforced cadres in the health centres, such as receptionists for administrative work and data collection/monitoring, counsellors, and community support groups for counselling and laboratory staff for blood collection [22].

The authors' conclusion is that a health centre/nurse-based ART delivery model is both feasible and very effective. However, they also emphasize that, particularly in the initial phase, the medical doctors had to spend considerable energy and time on training, supervising, and mentoring the nurses. This effort 'clearly paid off in the end' [22], but the authors warn that adequate supervision would continue to be a key factor for long-term success. They also mention as an important element of success, the high retention of nurses in this project, which they attribute to a mix of factors such as good training opportunities, a stimulating working environment, and performance-based financial incentives [22].

In a qualitative study of the 'involvement of new actors to achieve ART scaling-up' in Cameroon, Tanchou Yakam and Gruenais [23] illustrate another important issue related to task shifting. In their case, community health workers had been appointed to work in HIV counselling and testing centre attached to a provincial hospital, in order to relieve the busy health professionals of some tasks. The authors illustrate how 'the involvement of new actors within a dysfunctional, unregulated health system and the absence of specific role definitions' created

confusion [23]. Tensions, especially between nurses and community health workers arose with both struggling to reinforce their hierarchical position and over role definitions and identities. The key policy message of the study is that when involving new actors in the national model for ART scale-up, it is necessary to redefine the roles of all staff members and to 'build precise task-shifting procedures, so that everyone may still have a place in the system' [23].

The only published example of a national programme comes from Ethiopia, where the Ministry of Health started implementing a task-shifting initiative for ART service delivery in mid 2006. With the help of standardized and simplified delivery systems and protocols, in line with the public health approach of WHO, the country has facilitated the deployment of less skilled professional cadres and trained community members. The role of health centres in the delivery of ART has increased significantly. As a result of this initiative, the country has been able to considerably expand access to ART, especially in the rural areas [20].

Summing up, we can say that these studies show that task shifting in ART projects is possible and can increase access to treatment. National ART delivery programmes, such as those in Malawi and Ethiopia, which are widely considered as successful in scaling-up access, make extensive use of task shifting. Yet, there are few rigorous evaluations of task shifting, especially in large-scale national programmes. A currently ongoing Cochrane study of the 'substitution of nurses for doctors in managing HIV/AIDS antiretroviral therapy' may yield interesting findings when published [33].

Antiretroviral therapy delivery models and retention in care

Since the beginning of the scale-up of large ART programmes in sub-Saharan Africa, considerable attention has been focussed on patients' day-to-day adherence to ART. By contrast, the issue of long-term retention in ART programmes has received far less attention [34]. It is only in recent years that long-term retention has become a rising concern in ART programmes. In a systematic review, Rosen *et al.* [34] come to the conclusion that LTFU in ART programmes in Africa is on average around 40% at the end of 2 years, with wide variations between programmes [35].

However, our literature review did not reveal any peer-reviewed articles on ART delivery models specifically designed to assure retention. We, therefore, present a few interesting, nonpeer-reviewed publications from our review period, such as conference abstracts and articles in Web journals.

One of them comes from a USAID-AMPATH partnership in Kenya, from where Braitstein *et al.* [36] describe a 'novel care model to reduce early mortality among high-risk HIV-infected patients initiating ART', which they call 'high risk express care' (HREC). Initially, AMPATH's ART delivery model depended heavily on clinical officers who initiated patients on ART and continued to see them in monthly intervals. But, in order to reduce early mortality on ART among patients with CD4 cell counts below 100 cells/ μ l, it was decided that these patients should be seen on a weekly basis for the first 3 months on ART. This was made feasible by shifting some of the clinicians' tasks to nurses. They were trained to do weekly rapid symptom assessments either at a clinic appointment or by telephone and refer problematic cases to the clinician. Braitstein *et al.* [36] found that among all high-risk patients, being in the HREC programme was associated with a dramatically reduced risk of death [adjusted hazard ratio (AHR) 0.38, 95% CI 0.21-0.70, $P=0.00$] and of becoming LTFU (AHR 0.45, 95% CI 0.27-0.77).

Family Health International describes another ART delivery model in Tanzania, in which trained community volunteers collect the monthly ARV supplies for a group of clinically stable patients from remote communities in order to improve their adherence and retention in the ART programme [37]. Patients only need to personally attend clinics every 6 months for a medical examination. From April until December 2008, 100 patients had been receiving ARVs from community volunteers, and according to the authors their 'continuation rate had increased from a low of 55% to nearly 100%' [37].

Another abstract at the 2009 HIV/AIDS Implementers' Conference in Namibia describes the 'use of mobile phones to improve adherence and clinical outcome of patients on ART' [38]. The idea of using technological advances, such as mobile phones for routine follow-up of patients and for tracking those who have missed an appointment, is gaining ground, as described in a recent article in *IATIP* [39].

We only found two publications that link ART delivery models to patient outcomes. The first, by Zachariah *et al.* [40], is from before our review period. They document that death rates, retention in care, and overall ART outcomes were significantly better in an ART programme in Malawi in which much of the patient support was provided by the community than in an ART programme without community involvement. In the second, Wouters *et al.* [41**] present a quantitative assessment of the impact of three different community support initiatives on public sector ART outcomes in South Africa. They found that patients with a treatment buddy or an assigned community health worker, as well as those participating in a support group reported significantly better treatment outcomes than

patients without such support. They also show that 'the importance of community support as a predictor of treatment outcomes increased significantly during treatment' and call on health policy makers to acknowledge the important role of community support [41**].

It is surprising that there are no publications looking at ART within the frame of chronic disease care, even though HIV/AIDS obviously has a lot in common with noncommunicable chronic diseases, such as diabetes and coronary heart disease. All are lifelong conditions, requiring long-term medical interventions and lifelong adherence to medication and certain lifestyles. Therefore, chronic care models, such as WHO's 'Innovative Care for Chronic Conditions Framework' [42], that are usually thought of in relation with noncommunicable chronic diseases are potentially also very relevant for ART delivery.

Conclusion

There are many examples of ART programmes in LICs with high HIV/AIDS burdens that are trying to cope with health system constraints by a context-specific adjustment of their delivery models. Especially, the lack of highly qualified HRH is often dealt with by task shifting to less qualified health professionals or lay providers. However, it is important to emphasize that task shifting is 'not a panacea' [31*] and not an easy solution but needs to be accompanied by health systems' strengthening, without which the necessary training, support, and supervision structures to sustain task shifting cannot function.

Current ART programmes do not focus sufficiently on retention in care as one of the most important issues for the long-term success of ART programmes. The conference abstracts indicate that there are probably many individual projects in LICs experimenting with context-specific and innovative ART delivery models in order to improve retention in care. Yet, there is clearly a need for more research on what does and what does not work to retain people on ART and to inform the re-design of current ART delivery models in order to improve long-term retention in care.

References and recommended reading

Papers of particular interest, published within the annual period of review, have been highlighted as:

- of special interest
- of outstanding interest

Additional references related to this topic can also be found in the Current World Literature section in this issue (p. 107).

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Using the method of scenario building, this article describes how unlikely it is for current ART programmes to achieve universal access to ART. The authors call for some radical changes of ART delivery models in low-income countries with high HIV burdens, including a 'de-medicalization' of ART.

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