

HIV, aging and continuity care: strengthening health systems to support services for noncommunicable diseases in low-income countries

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Although health systems in most low-income countries largely provide episodic care for acute symptomatic conditions, many HIV programs have developed effective, locally owned and contextually appropriate policies, systems and tools to support chronic care services for persons living with HIV (PLWH). The continuity of care provided by such programs may be especially critical for older PLWH, who are at risk for more rapid progression of disease and are more likely to have complications of HIV and its treatment than their younger counterparts. Older PLWH are also more likely to have other chronic noncommunicable diseases (NCDs), including hypertension, diabetes, cancers and chronic lung disease. As the number of older PLWH rises, enhanced chronic care systems will be required to optimize their health and wellbeing. These systems, lessons and resources can also be leveraged to support the burgeoning numbers of HIV-negative individuals with chronic NCD in need of ongoing care.

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Introduction

Health systems in most low-income countries (LICs) largely provide episodic care for acute symptomatic conditions [1,2] and services for maternal, infant and child health [3,4], reflecting their limited resources and historical disease patterns. The global burden of noncommunicable diseases (NCDs) is rising rapidly, however [5,6], and although populations are aging around the world [7], most health systems have generally not adapted to these demographic and epidemiologic changes [8,9]. Episodic care is not an effective or efficient way to approach chronic disease management – from either the perspective of affected individuals or the perspective of health systems – and this model of service delivery will not achieve optimal outcomes for the

growing population with NCDs and other aging-related conditions [10,11]. How can poorer countries, many facing a ‘quadruple burden’ of maternal and child health threats, infectious diseases, chronic diseases and injury [12,13], transform their health systems to enable longitudinal prevention, care and treatment services for chronic diseases?

NCDs represent a heterogeneous and etiologically diverse group of health challenges, but a common defining characteristic is their *chronicity*. The successful management of chronic diseases requires coordination of services over time and across disciplines, delivered by health systems designed to provide continuity of care [14,15]. Thus, in order to respond to the changing disease burdens of their populations, LICs will need to fundamentally reassess the

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goals and structures of their primary healthcare systems, designing health services able to tackle both chronic and acute conditions.

Nolte and McKee [14] note that chronic conditions 'require a complex response over an extended time period that involves coordinated inputs from a wide range of health professionals and access to essential medicines and monitoring systems, all of which need to be optimally embedded within a system that promotes patient empowerment'. Bischoff *et al.* [16] have characterized the fundamentals of chronic care as the six Cs: continuity of relationship between provider and patient; coordination amongst multidisciplinary care teams; communication among providers and between patients and care teams; cooperation, with patients as active partners; consultations and effective linkages between levels of the health system; and community linkages. In order to provide these key elements of continuity care, health services in LICs will need to markedly enhance their ability to diagnose and engage patients with NCDs, retain patients in care over time and provide coordinated services via strong referral and linkage systems.

Of note, many LICs have already established continuity care programs for HIV, an achievement whose relevance to the current and future challenge of NCDs and the needs of aging populations is often overlooked. National HIV programs developed over the past decade provide local models of large-scale, contextually appropriate and increasingly decentralized chronic disease initiatives. Lessons learned from HIV scale-up may enable these same countries to accelerate programs for a range of chronic health conditions, leveraging investments in HIV services to strengthen health systems for continuity care [17–20].

Lessons learned from NCD programs around the world can also enrich HIV programs, and a comprehensive approach to NCD prevention, care and treatment will likely improve the quality of care for persons living with HIV (PLWH) irrespective of age. Data from LICs are limited, but they suggest that PLWH are at higher risk than the general population for cardiovascular disease, as they are in resource-rich settings; dyslipidemia and diabetes are also associated with some antiretroviral drugs [21–23]. Thus, the inclusion of systematic approaches to screening for and management of NCD and NCD risk factors will be needed to maintain the advances of HIV treatment scale-up and to assure optimal overall health outcomes for PLWH.

In this article, we explore ways in which innovative strategies introduced in the past decade for HIV service delivery might inform and support health system adaptation for NCDs and other health services for aging populations.

The graying of persons living with HIV

Data on the numbers and trends of older PLWH in LICs are scant. As noted by other authors in this Supplement, more than 13% of PLWH in sub-Saharan Africa (SSA) are 50 years of age or older [24] and these patients have not received particular attention to date [25], despite evidence of their higher risk of mortality and more rapid disease progression than younger PLWH [26]. Other data have emerged from HIV programs in recent years, demonstrating the growing prevalence of older PLWH in care and treatment programs. For example, ICAP Columbia University (www.columbia-icap.org), a large program funded by the President's Emergency Plan for AIDS Relief, supported HIV care and treatment services for approximately 1 064 000 individuals at 2284 health facilities in 11 countries in SSA as of 30 June 2011. Findings from a subset of these facilities (in Kenya, Mozambique, Rwanda and Tanzania) illustrate an increase in enrollment of PLWH over the age of 50 from 9.9 to 12.6% between 2005 and 2011 (Fig. 1).

The centrality of continuity care for older persons living with HIV

Older PLWH are at risk for more rapid progression of HIV disease than their younger counterparts [27–29], and are more likely to have chronic complications of HIV and its treatment [30–32]. Older PLWH are also more likely to have NCD comorbidities, including hypertension, diabetes, cancers and chronic lung disease. Polypharmacy in older patients may be complicated by an increased frequency of adverse events and the need to adjust dosing due to aging-related renal insufficiency; it may also make adherence even more challenging, particularly in patients with aging-related frailty, forgetfulness, limited mobility and other psychosocial barriers.

Given these challenges, high-quality continuity care is particularly important for older PLWH. Studies such as the Strategies for Management of Anti-Retroviral Therapy trial [33] have shown that antiretroviral therapy may decrease the risk of non-AIDS events such as cardiovascular, liver and renal complications. Psychosocial and adherence support, HIV-specific clinical and laboratory monitoring and screening and management of NCD and NCD risk factors can all help to mitigate the increased risks of older PLWH. As HIV programs – and their patients – mature, attention to the specific needs of older patients should include close monitoring for disease progression and response to treatment, vigilance for adverse effects of treatment, support for adherence and retention and incorporation of NCD prevention and management strategies. Coordination, coscheduling and colocation of services will optimize outcomes, as will the

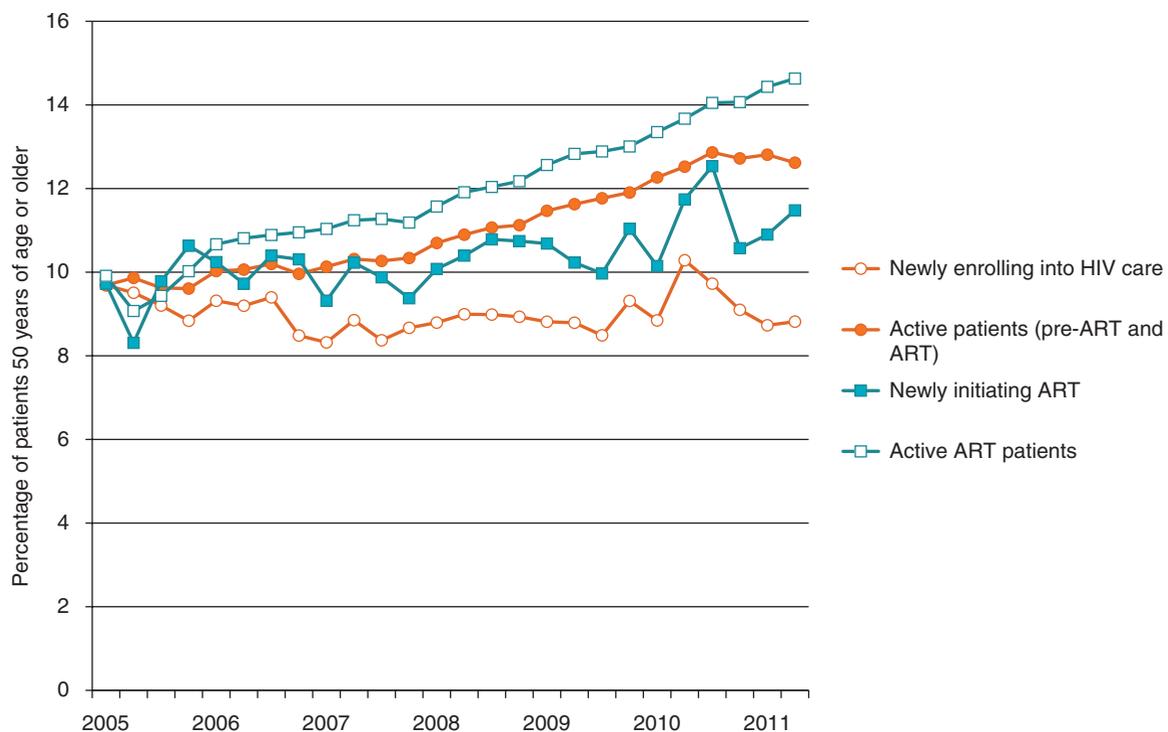


Fig. 1. Percentage of patients at least 50 years of age enrolled in HIV care at ICAP-supported health facilities in Rwanda, Tanzania, Mozambique and Kenya. Data from ICAP Columbia (www.columbia-icap.org).

utilization of multidisciplinary teams of providers attending to both clinical and supportive services [34].

Whether guidelines for ART initiation, clinical and laboratory monitoring, psychosocial support or other elements of HIV-specific management should be modified for patients over 50 years remains unknown. It is clear, however, that robust continuity care systems are required to optimize HIV outcomes for older PLWH. In addition, HIV programs will need to expand to include systematic efforts to screen for and manage NCD and NCD risk factors among the millions of PLWH enrolled in care and treatment programs.

Continuity care systems: lessons from HIV scale-up

Formerly considered diseases of affluence and of the elderly, it is now clear that mortality from NCD is disproportionately high in LICs, where deaths also occur at a younger age compared with high-resource countries [35]. In SSA, for example, NCD account for approximately one-third of deaths among adults aged 15–59 years [36].

As we have described previously [16], the constrained health systems in resource-limited settings typically

provide only episodic care and are often designed for the relief of acute symptoms rather than the maintenance of wellbeing or the prevention and care of chronic conditions. Although expert guidance on chronic care in wealthy countries and in LIC has long been available [37–40], very few countries in SSA have national NCD programs, and large-scale chronic care services are rarely available [41,42]. In contrast, the resources, political will, civil society engagement and human rights framework of HIV programs have enabled the scale-up of complex chronic services for millions of people [43], providing hands-on experience in the implementation of national chronic disease programs.

Although a detailed description of the strategies, systems and tools used to support continuity care for HIV and ‘the six Cs’ within HIV programs is beyond the scope of this article, Table 1 [18] summarizes the key highlights. Not all of these approaches will be relevant to every context or program, but many practical, validated and contextually appropriate resources are available in local languages and are familiar to clinicians and managers at the facility, district, province and national levels.

Opportunities

HIV programs in many countries have a wealth of experience in designing, implementing and evaluating

Table 1. Approaches to continuity care: lessons from HIV scale-up.

Approaches to support continuity care	Examples from HIV programs in LICs
Policies	The 'three ones' approach: one national coordinating body, one national guideline, one national M&E system Prevalence-based enrollment targets at facility, district, province and national levels Development of an 'essential package of care' for facilities at each level of the health system (hospitals, clinics, health centers) Use of a public health approach and standardized step-by-step protocols (not just guidelines) for diagnosis, care and treatment Promotion of simplified point-of-service diagnostic testing Use of simple indicators for longitudinal M&E of cohorts
Systems	Decentralized, community-based diagnostic testing HMIS systems adapted for chronic disease services Appointment and defaulter tracking systems Procurement of drugs and supplies Clinical mentoring and supportive supervision systems Tiered laboratory systems and referral networks Task-shifting and task-sharing approaches The systematic use of peer educators and expert clients
Tools	Appointment books Charting tools, forms and flow sheets Job aids and algorithms Adherence support tools, pill boxes and reminder systems M&E registers, logbooks and databases Referral and linkage forms Transportation vouchers Patient education materials for adherence support

HMIS, health management information systems; LIC, low-income country; M&E, monitoring and evaluation. Adapted from [18].

continuity care services. These resources now have the potential to support enhanced chronic care for older PLWH, and the platform created by HIV programs may also provide an opportunity to expand continuity care systems and chronic disease services to the broader non-HIV population. As illustrated in Fig. 2, there are multiple approaches to providing such care, ranging from parallel to fully integrated chronic care services.

In some contexts, this may necessitate the development of integrated chronic disease programs, which provide services both for PLWH and for HIV-negative patients with illnesses such as diabetes or cardiovascular disease. One such example is the integration of HIV and NCD care at 'chronic disease clinics' in Cambodia described by Janssens *et al.* [44]. A related approach was piloted at a hospital in Uganda, which used its HIV clinic to offer chronic care services for HIV-negative patients with diabetes and hypertension 1 day a week; results of this project are yet to be published [45]. In other settings, the HIV testing platform has been used to screen for cardiovascular disease and NCD risk factors in a pilot study in Kenya (http://www.fhi360.org/en/Country-Profiles/Kenya/res_KenyaCVD.htm) and in South Africa [46].

In other contexts, integration may be limited to programmatic or 'back office' functions rather than at the service delivery level, such as guideline development, procurement and laboratory support, decentralized

diagnosis, appointment systems, support for adherence and retention, and/or approaches to cohort monitoring and evaluation. We demonstrated the potential of this approach in a small pilot study in Ethiopia by adapting HIV-specific systems and tools to support care for patients with diabetes in the outpatient department of the same facility [47]. Services for HIV and diabetes were not integrated at the point of care, but the approach developed to support lifelong care for PLWH was effectively leveraged to enhance diabetes services at the same facility.

Challenges

Despite the availability of local experience, strategies and tools to support continuity care, national NCD programs face formidable barriers. Innovative conceptual, policy and programmatic frameworks will be needed to balance the commonalities and differences between this diverse group of diseases, creating integrated systems for continuity care while recognizing the need for disease-specific guidelines and interventions. Avoiding siloes and strictly 'vertical' programs is another challenge, as is the need to expand NCD services without undermining HIV programs or compromising care for other priority health conditions, such as maternal and child health. Implementation research is needed to identify optimal approaches to the integration (or coordination) of chronic care services for NCDs. Funding remains a

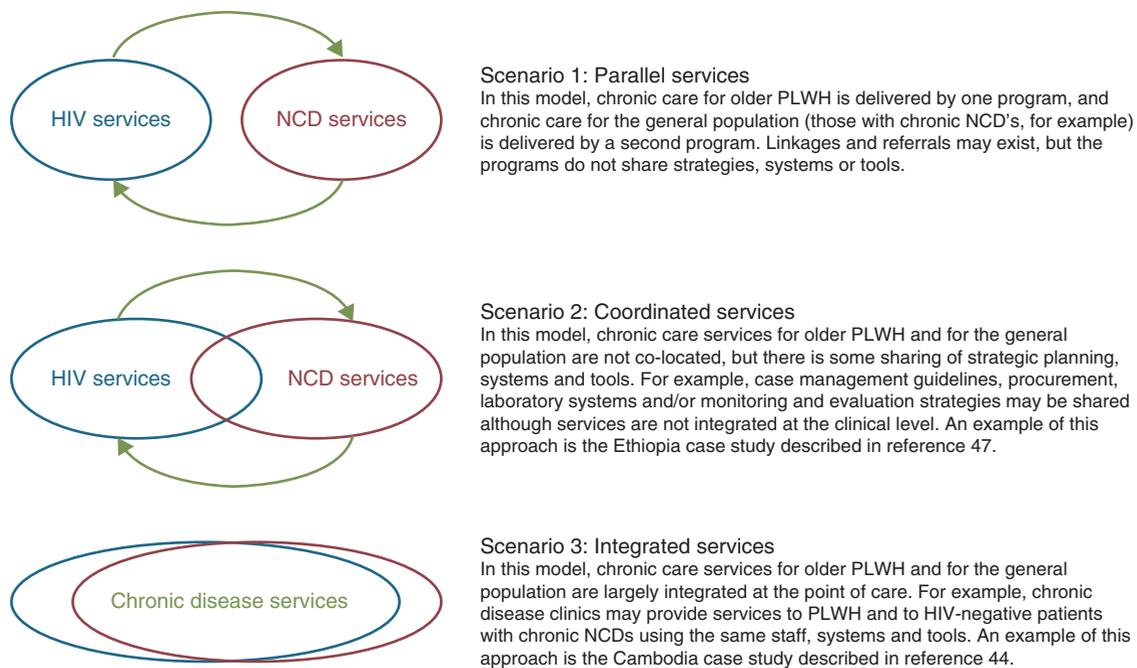


Fig. 2. Approaches to delivering chronic care to older persons living with HIV and to the general population.

critical challenge: the average health expenditure in SSA in 2011 remained considerably less than the recommended \$45 per capita, an amount that does not include the current costly treatment of NCDs [48]. Also, although the United Nations General Assembly Special Session on NCD in September 2011 raised awareness of the burden of NCD in LIC, has yet to catalyze significant additional funding to respond to this threat.

Conclusion

Older patients – with and without HIV – will increasingly require health systems capable of providing continuity care at all levels. The lessons of HIV scale-up and the resources developed by HIV programs to support continuity care have the potential to support and enhance NCD services for PLWH and the general population alike. One key lesson from HIV programs is the need for a public health approach in which simple, standardized algorithm-driven interventions are developed for multi-disciplinary teams, particularly nonphysician clinicians. NCD programs that depend on physicians and individualized treatment protocols are unlikely to achieve the coverage necessary to confront the widespread NCD burden in most LICs. The engagement of patients and communities is also a critical component of chronic care programs, needed to support the vitally important element of retention in care and adherence with treatment. Finally, the development of a unified approach to continuity care services that encompasses HIV and NCD programming can avoid the creation of multiple

vertical programs. These tested approaches will require additional domestic and international resources to implement at scale, and the global donor community will need to confront the looming threat of chronic disease if health gains are to be sustained and expanded.

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Conflicts of interest

There are no conflicts of interest.

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