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The Leading Edge

Leveraging the lessons learned from HIV/AIDS for coordinated chronic care delivery in resource-poor settings



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1. Introduction

Though far from complete, the global fight against the HIV/ AIDS epidemic has made significant strides. Since 2001, global incidence of new HIV infections has declined by 38% annually, including a 58% decline in new infections in children.¹ Fifteen million people are now receiving antiretroviral therapy, compared to less than one million ten years ago.² Much of this progress has been accomplished in sub-Saharan Africa, which bears the burden of the epidemic with 71% of the global number of people living with HIV/AIDS. In this region, 87% of patients who know their status and are eligible for antiretroviral therapy (ART) are now receiving treatment, and 76% of those patients have achieved viral suppression.¹ AIDS-related deaths have decreased by 35% since their peak in 2005, and 4.8 million deaths are reported to have been averted by the development and delivery of safe, effective antiretroviral therapy in sub-Saharan Africa alone.¹ Many have taken to declaring the "End of an epidemic" and looking forward to an "AIDS-free generation".³ However, despite the relative gains made in the health system response by sub-Saharan African countries for the chronic management of patients with HIV/AIDS, a diverse group of other chronic conditions comprise a major driver

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http://dx.doi.org/10.1016/j.hjdsi.2015.09.006 2213-0764/© 2015 Elsevier Inc. All rights reserved. for the burden of disease in these countries.^{4,5} Non-communicable diseases (NCDs) comprise a large proportion of such chronic diseases, including, but not limited to, rheumatic and congenital heart diseases, post-infectious renal failure, malignancies, sickle-cell anemia, type 1 diabetes, asthma, depression, epilepsy, and the chronic sequela of trauma in its various manifestations. This group of diseases accounts for 36% of deaths, 33% of years of life lost, and 44% of DALYs in low-income countries amongst the population younger than 40 years of age.^{6,7}

2. Catalyzing health system development to address chronic disease

In addition to the human and population impact of the response to the HIV/AIDS epidemic, perhaps its most lasting impact has been on health delivery systems in sub-Saharan Africa.^{8–10} Supported only to deliver a handful of targeted interventions for acute conditions in addition to basic preventive measures, heath systems in sub-Saharan Africa were not properly equipped to address the chronic implications of the massive HIV/AIDS epidemic.^{11,12} Some experience with provision of services for chronic care had existed in the form of directly observed treatment for tuberculosis, which since the early 1990s had been implemented in some regions, though without clear benefit.^{13,14} Isolated experiences with chronic care organization also existed

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for several non-communicable conditions, such as provision of hypertension and diabetes services in primary health facilities, although not on a large scale.¹⁵ Parallels with other conditions were limited, and HIV/AIDS existed on a separate magnitude of prevalence for an imminently lethal chronic disease than had ever been experienced before.¹⁶

A crucial frame shift in the response to HIV/AIDS was the coordination of health care services to focus beyond individual patient encounters and emphasize longitudinal care for individual patients.¹⁷ Through the HIV/AIDS response, health systems were required to extend and reorganize health services to provide primary and secondary preventive measures, deliver acute management, and provide follow-up care to patients for future visits in the same health care setting with the same health care provider. Policy makers and implementers were forced to rapidly assess infrastructure and capacity needs, scale up staffing and human resources, update diagnostics and laboratories, adapt charts and registers, strengthen procurement strategies and supply chains, and create large-scale monitoring and evaluation systems to address a disease that could not be cured, but had to be treated over the course of years and potentially decades. The strengthening of health systems to provide chronic care was one laden with many challenges; however, the resultant decreases in premature morbidity and mortality from a coordinated HIV/AIDS response now demonstrate the potential impact of effective chronic care delivery within otherwise under-resourced health systems.

3. Key elements of chronic care delivery from the ART experience

Fortunately, the framework for health delivery systems in resource-poor countries to address the burden of chronic disease, including endemic NCDs, mental disorders, and the chronic consequences of injury and disability, has already been constructed, evaluated, and improved over the past 15 years in response to the HIV/AIDS epidemic. Key elements of the HIV/AIDS response (summarized in Table 1), once thought to be novel and innovative, have become the backbone for ART delivery systems throughout sub-Saharan Africa and beyond.¹⁸

3.1. Task shifting

One of the major barriers to delivery of care in the HIV/AIDS epidemic was the lack of well-trained health care workers capable of providing the perceived complexities of chronic care for HIV/AIDS.¹⁹ In 2006, 36 African countries reported a critical shortage of health care professionals (less than 2.3 doctors, nurses, and

midwives per 1000 population), thereby rendering the provision of essential services highly unlikely.²⁰ However, with the development of evidence-based clinical algorithms and guidelines, clinical decision support tools, and training curricula and methodology, clinical decisions and tasks previously thought to be in the realm of only highly trained specialist physicians were transferred to general care providers, including nurses and lay health care workers.²¹ Recent studies have shown no decrement in patient outcomes and even lower rates of patient loss from care when ART delivery is shifted from physicians to nurses.^{22,23} In addition to didactic trainings, ongoing quality assurance, continuous quality improvement, and mentorship support for health care workers are now recommended to maintain high-quality ART services.²⁴ Task shifting/sharing not only creates a larger workforce able to meet the demands of HIV care and treatment, but also allows more specialized clinicians to focus on more complex or advanced pathology.

3.2. Decentralization

The HIV epidemic was challenged with the prospect of providing care not only to highly populated referral centers, but increasing geographic access to services for rural communities and hard-to-reach populations. In order to provide appropriate access to services, new facilities were needed, and staff, medications, tools, and other commodities were required to deliver services closer to patients' communities and homes. The drive to decentralize services stimulated innovations in diagnostic and treatment modalities, as well as task shifting of clinical services. There was a renewed interest and emphasis on the use of community health workers for case detection, contact tracing, linkage to services, and adherence support. Mobile technology, primarily in the form of mobile text reminders, has shown promise in linking patients to facilities, tracking lost patients, and supporting patient adherence to therapy.^{25,26} Several recent studies have demonstrated a decrease in patient attrition after decentralization of ART services to peripheral health facilities and community-based delivery programs.^{27–29}

3.3. Medical commodities

The need for effective antiretroviral drugs, as well as other essential medications, became an urgent call for simplification and stabilization of supply chains for the HIV/AIDS response. There was the need for "disruptive technologies" and "game changers", which did not depend on incremental and iterative improvements of previously existing innovations, but rather a dramatic change in the paradigm of how care was delivered.¹⁸ Upon development and

Table 1

Key elements and priority interventions in chronic care delivery from the ART experience.

Key innovation	Priority interventions
Task-shifting	Supporting adequate staffing, developing novel curricula and training methodology with simplified context-specific algorithms; providing mentorship for continuous quality improvement
Decentralization	Prioritizing rural access to care and infrastructure development with training, equipment, and accreditation of rural facilities; piloting mobile, point-of-care, and community-based solutions
Medical commodities	Innovating and subsidizing of drugs and technologies, improving and stabilizing supply chains, expanding public sector for- mularies and integrating with existing health insurance schemes
Retention and adherence strategies	Providing community support, developing mobile technologies, and mitigating socioeconomic barriers to care, including transport, nutrition, and referral costs for most vulnerable
Patient groups and peer support	Creating community-based or facility-based patient care and peer support groups
Health information systems	Developing electronic medical record capacity and automated reporting; establishing aggregated data collection and reporting on key indicators for epidemiologic, programmatic, and policy decision making
Systems reorganization/integration	Integrating delivery systems for chronic disease at all levels of health system; leveraging tools, trainings, information systems, and supply chains for health system strengthening
Global advocacy agenda and targets	Establishing collaborative funding initiatives to achieve common metrics and targets

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