Global partnerships to support noncommunicable disease care in low and middle-income countries: lessons from HIV/AIDS

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Objective: The aim of this study was to identify lessons learned from partnerships addressing the HIV/AIDS epidemic that can inform those needed to mitigate the noncommunicable diseases (NCDs) epidemic in low and middle-income countries (LMICs).

Design: We selected and analysed a convenience sample of organizational partnerships developed to address the HIV/AIDS epidemic in LMICs, focusing on their specific strategies and contributions.

Methods: A review of published literature and website information pertaining to a convenience sample of five global organizations and/or types of partnerships that provide support to fight the HIV/AIDS epidemic was qualitatively analysed to assess key areas of support provided to scale-up services in response to the HIV/AIDS epidemic.

Results: Six topical areas of support were identified: HIV/AIDS service delivery; enhancing comprehensive health systems capacity; operational and implementation science research to improve care delivery; introducing and improving the availability of new products; political advocacy; and early-stage planning for sustainability and transition to more independent implementing-country delivery programmes. These six areas of support were qualitatively assessed for identify a focus, contributory or minimal contribution on the part of each of the organizations and/or types of partnerships reviewed.

Conclusion: No single global partnership addresses the range of support needed to respond to the HIV/AIDS epidemic, and this will likely be true for an effective response to the emerging NCD epidemic. A range of coordinated financial and/or technical support as well as lessons learned from global HIV/AIDS partnerships will be key to achieving an effective response to the global NCD epidemic.

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Introduction

During the last decade, international, national and local organizations have proven effective in combatting the global HIV epidemic, yet such progress is not yet realized for the control of noncommunicable diseases (NCDs). To mitigate the HIV epidemic, many organizations have applied their respective strengths to mobilize resources, provided technical support, driven innovation in biomedical and implementation science, and engaged with governments and communities in countries with high burdens of HIV at a scale previously unprecedented in global health. In 2015, total donor funding available to address HIV in low and middle-income countries (LMICs) exceeded USD $7.5 billion [1]. The United States has played a leading role in mobilizing organizations, both through the U.S. funded President's Emergency Fund for AIDS Relief (PEPFAR) and the multilateral funded Global Fund to Fight AIDS, Tuberculosis and Malaria. The U.S. provided $12 billion of the total $37.7 billion contributed to the Global Fund to fight AIDS, TB and Malaria as of September 2016 [2]. This tremendous investment has had an undeniable impact on turning the tide of the HIV epidemic. More than 19.5 million people are now on life-saving antiretroviral treatment compared with the less than one million who were on treatment in 2000 [3]. AIDS is not over, but thanks to a coordinated global response, significant progress is being made, and the world is focused on the possibility of an AIDS-free generation.

This progress required a global coalescence of leadership and expertise, including the engagement of numerous governments, civil society organizations, researchers and clinicians. No one country or organization can fight complex epidemics alone; global and national partnerships are necessary for the fight. Indeed, through the lens of broader global development, Goal 17 of the Sustainable Development Goals (SDGs) calls for strengthening of partnerships in order to achieve sustainable impact [4].

The emerging pandemic of NCDs in LMICs has many features that mirror the early stages of the global HIV crisis. Medications for NCDs are accessible and affordable to most people in high-income countries (HICs), but this is not the case in LMICs. The global toll of NCDs falls primarily on people living in low-resource settings, with nearly 75% of NCD-related deaths occurring in LMICs [5]. NCDs are now the leading cause of death for working-aged people in LMICs [6]. Although the WHO predicts that global deaths due to NCDs will increase by 15% from 2010 to 2020, the increases will be greatest in Africa, South-East Asia and the Eastern Mediterranean [7]. The WHO projects that NCDs will surpass communicable diseases as the major cause of death on the African continent by 2030. If current trajectories persist, LMICs will face a triple threat of NCDs, communicable diseases and the economic burden resulting from rising healthcare costs and a workforce affected by NCDs.

Lessons from the global HIV response should inform a coherent and effective response to the global NCD pandemic. Prominent among those lessons is the impact of global partnerships. Deliberate examination of these partnerships can inform new partnerships necessary to control the rising prevalence and impact of NCDs. Furthermore, opportunities may exist to leverage and adapt existing HIV partnerships, as the systems for HIV care and treatment resemble those needed for NCDs, that is a chronic care model. This is particularly relevant given the fact that many people living with HIV also contract NCDs.

A convenience sample of global partnerships that have been effective in galvanizing support for the global HIV response are examined herein to inform progress towards developing effective global partnerships to mitigate the growing burden of NCDs.

Materials and methods

A convenience sample of multilateral organizations, donor governments and public-private partnerships working to mitigate the impact of the HIV epidemic was qualitatively reviewed. The strategies and primary activities of four global partnership organizations and three public-private partnerships that have played prominent roles in the success of the HIV response were reviewed. Six areas of financial and/or technical support were reviewed: strengthening HIV service delivery; enhancing health systems capacity; operational and implementation science research to improve care delivery; introducing and improving the availability of new products; political advocacy; and early-stage planning for sustainability and transition to more independent implementing-country delivery programmes, and qualitatively assessed as being a focused, contributory or minimal concentration of support on the part of these partnership organizations. Several of these activities are congruent with health partnership objectives categorized by others [8]. In addition, to illustrate the effective utilization of resources from global partnership organizations, we provide descriptive characteristics of a local partnership organization that combines multiple funding sources from government and academia to provide integrated services that address both HIV/AIDS and NCDs.

Results

The mission and work of the following four partnership organizations (three multilateral organizations and one donor government that supports partnerships), and three partnership initiatives were examined for the focus of their work on six types of support activities. This is summarized in Table 1.

Table 1. Partnership activities and methods of support of select organizations involved in addressing the HIV/AIDS epidemic.

Organization / Area of Support	Global Fund to Fight AIDS, TB, Malaria	Joint United Nations Programme on HIV/AIDS (UNAIDS)	President's Emergency Plan for AIDS Relief (PEPFAR)	UNITAID	Private Sector Partnerships (Pink Ribbon/Red Ribbon, PEPFAR-AstroZeneca, PEPFAR – Becton Dickinson)
HIV/AIDS Service Delivery; Financial or Technical Support	**Focus**	**Focus**	**Focus**	Minimal	Contribute
Comprehensive Health Systems Capacity Support	Contribute	Contribute	Contribute	Contribute	Contribute
Implementation Research to Improve Delivery	Contribute	Contribute	Contribute	Contribute	Contribute
Introduction and Availability of New Health Products	Contribute	Contribute	Contribute	**Focus**	**Focus**
Political Advocacy for Accountability, Inclusion, and Resource	Contribute	**Focus**	**Focus**	Contribute	Minimal
Enhanced Approaches to Sustainability and Transition	Contribute	Contribute	Contribute	Contribute	Minimal

Green = Plays primary leadership role in utilizing this mode or supporting this activity when addressing HIV/AIDS in LMICs. Yellow = Plays a supporting (but not primary) role in utilizing this mode or supporting this activity when addressing HIV/AIDS in LMICs. Orange = Plays a very small role in utilizing this mode or supporting this activity when addressing HIV/AIDS in LMICs. LMICs, low and middle-income countries.

Multilateral organizations

Global Fund to Fight AIDS, Tuberculosis, and Malaria

Established as a country-driven funding mechanism, the Global Fund partnership raises and distributes close to USD $4 billion per year [9]. This partnership brings together funders, recipient countries and communities, civil society, the private sector, foundations and multilateral partners to set policies and strategies as well as support implementation of programmes at community and regional levels. This occurs at the international governance level (i.e. the Board), and in-country through country coordinating mechanisms (CCM)s. As an in-country partnership body, CCMs bring together government leadership with nongovernmental partners and representatives of civil society to plan and oversee implementation of Global Fund grant funding. This is a key forum to engage with community representatives and key-affected populations. As a nontechnical, funding organization, the Global Fund relies on national and international technical partners to support programmes in following accepted technical standards and norms.

Although the mandate of the Global Fund to Fight AIDS, TB and Malaria is to control these three communicable diseases, progress against the three diseases is dependent upon functioning health systems. Accordingly, the Global Fund contributes to building and strengthening health systems while accomplishing its mandate, but does not have the resources for comprehensive health systems strengthening across the more than 100 countries it supports. Key areas of focus of Global Fund health systems support include data systems, supply chain and financial management in the context of investing in the three diseases. Acknowledging country context leads to variability in health systems support, as summarized in its policy on 'Resilient and Sustainable Systems for Health'.

Global Fund supported programmes are consumers of research, that is they benefit from research advances, but do not focus on research. Global Fund grants can support operational research that is directly applicable to the improvement of health service delivery, coming primarily from the funding allotted for monitoring and evaluation.

The Global Fund has recently instituted a Sustainability, Transition and Co-Financing Policy, and is focusing attention on the support countries require to assume greater levels of financial, technical and political leadership in the fight to control the three diseases. The long-term nature of this work is evident, as there are severe economic limitations in many countries with high disease burdens.

UNAIDS

The Joint United Nations Program on AIDS (UNAIDS) was created as a cross-United Nation partnership to draw upon the strengths of multiple United Nation agencies in

support of strong national responses to the HIV epidemic. These multisectorial approaches are critical for effective control of the epidemic. Technical leadership in areas such as strategic information, collection of epidemiologic and programme data, campaigns for treatment and prevention and elimination of mother-to-child HIV transmission contribute to increases in the number of people living on antiretroviral therapy with normal life expectancy, reductions in deaths due to AIDS,and infections averted among children.

The UNAIDS partnership has been instrumental in galvanizing advocacy, political commitment and action at multiple stages of the global HIV response. Underlying technical goals and initiatives, UNAIDS has been particularly effective in providing an inclusive platform for civil society, with an emphasis on marginalized, stigmatized populations impacted by the HIV epidemic. This inclusion has proven critical to reaching vulnerable and at-risk populations with services, relevant to ensuring health systems are prepared and responsive to their needs. UNAIDS drives this perspective and creates opportunities in ways that are unique among United Nation agencies. UNAIDS does not focus on increasing health systems capacity. However, connecting those most likely to be excluded from health services with technical experts and skilled advocates forges critical partnerships essential to sustainability as countries advance their systems towards integrated healthcare for chronic disease management and the control of NCDs.

UNITAID

UNITAID is a global partnership founded by Brazil, Chile, France, Norway and the UK to increase affordability and availability of vital health commodities for HIV/AIDS, malaria and tuberculosis. UNITAID leverages price reductions of quality drugs and diagnostics, and accelerates the pace at which they are made available. Funding to UNITAID comes primarily from donor governments and includes innovative financing such as taxing airline tickets. UNITAID supports late-stage product development, which is informed by in-country needs and the implementation and scale-up of product delivery through a variety of international and national organizations. This includes operational research intended to shed light on optimal service delivery methods to increase access to essential health products to fight the three diseases.

Although not the focus of its mission, UNITAID commits some support for health systems capacity-building, for example supply chain for health products. The 2017–2021 UNITAID strategy places greater emphasis on the integration of its work with other health needs, and the consequent effects on health systems. Examples include development and scale up of health products that are useful for more than one disease that allow decentralization of healthcare delivery, and/or lead to efficiency in the delivery of care. In addition, products for reproductive, maternal, neonatal and child health (RMNCH) constitute a 'thematic narrative' (as compared to a 'disease narrative').

RMNCH activities are important models for emerging NCD epidemics, given the need for lower-cost, easier-to-use health products across multiple diseases.

Donor government

US President's Emergency Plan for AIDS Relief

US President's Emergency Plan for AIDS Relief (PEPFAR) is a bilateral HIV programme of the US government that supports multiple national and global partnerships. From a USA domestic perspective, PEPFAR took shape out of a unique political and legislative partnership amongst elected leaders with a defined mission. Its work is bolstered by community and advocacy voices, faith-based organizations, public health and scientific leadership. From a global perspective, PEPFAR contributes one-third of Global Fund resources, is the largest government funder of HIV activities to the United Nation system, has catalyzed numerous private sector partnerships and engages at senior diplomatic, advocacy levels and technical levels within bilateral and multilateral platforms.

PEPFAR has made an unprecedented impact in global efforts to control HIV due to its size and commitment. PEPFAR has provided over USD $70 billion since enacted in 2004 to the fight against HIV/AIDS [10]. In addition to its funding of other organizations, PEPFAR draws upon substantial technical expertise from across the USA government and externally to focus on collecting and reporting results, and creating accountability. This has helped PEPFAR to maintain durable support throughout changes in USA political leadership.

The mandate of PEPFAR to reverse the HIV epidemic is clear and specific. Yet, achievement of results is dependent upon health systems with the capacity for chronic care management. Recognizing this, PEPFAR provides substantial support for in-country data systems, training healthcare workers and procurement and supply chain.

The USA government, through PEPFAR, has elevated partnerships with implementing country governments to new levels through its diplomatic corps. This government-to-government relationship, along with funding of community-based organizations, has created multiple political and advocacy interventions. This work is, in part, directed towards increasing domestic funding and accountability for HIV programmes to drive towards sustainability and transition.

PEPFAR does not directly fund biomedical research, yet is a major consumer of HIV research advances, largely funded by the USA National Institutes of Health. Advances resulting from biomedical and behavioural

research have emboldened PEPFAR to call for an 'AIDS Free Generation'. PEPFAR vigorously depends on data and supports limited and focused operational research to improve effectiveness and efficiency of HIV service delivery.

Public-private partnerships

The private sector contributes to the fight against HIV/AIDS and NCDs by providing funding and technical expertise according to core competencies and comparative advantages. These technical skills include marketing, sales, product design, product distribution, supply chain, internet-based communications technology and provider training. International private sector partnerships for HIV control also supply new products: medications, medical devices and laboratory equipment to expand access and efficiencies across health systems. Innovations created within the private sector can enable programmes to reach larger numbers of people. Private sector investments with public sector partners provide private entities with opportunities to enter new markets. However, when not fully coordinated with public sector programmes, these partnerships tend to be short-term, pilot efforts, which yield limited long-term results.

Since its inception, PEPFAR has consistently engaged with the private sector to bolster its programmes, expand its reach and deploy new technologies. One current partnership is the Accelerating Children's HIV/AIDS Treatment Initiative (ACT), a 2-year effort to double to the number of children receiving ART in sub-Saharan Africa. Another partnership is the DREAMS Initiative, which aims to reduce HIV infections among adolescent girls and young women in sub-Saharan Africa. The Elton John AIDS Foundation LGBT Fund funds grants that provide technical assistance to combat stigma, discrimination and violence against members of the LGBT community in sub-Saharan Africa and the Caribbean.

PEPFAR has also engaged in public-private partnerships to address NCDs, particularly among people at risk of or living with HIV. Below, we describe three of these partnerships: Pink Ribbon Red Ribbon (PRRR), Labs for Life and PEPFAR'S partnership with AstraZeneca.

Pink Ribbon Red Ribbon

A notable HIV-NCD global public-private partnership is PRRR, a partnership between the George W. Bush Institute, PEPFAR, UNAIDS and the Susan G. Komen Organization. Formed in 2011 to combat cervical and breast cancer, it expands availability of cervical cancer screening and treatment services, especially for high-risk, HIV-positive women, building on a platform of care supported by domestic, PEPFAR and Global Fund investments [11]. Through PRRR, women's access to screening for cervical cancer, vaccinations for human papillomavirus (HPV), and HIV testing services has increased in many LMICs. As part of this partnership, Merck provided over 265 000 donations of the GARDASIL vaccine and Susan G. Komen for the Cure has invested in cervical and breast cancer community sensitization and mobilization activities. Private sector partners such as Merck, GSK and Bristol-Myers Squibb have also contributed to PRRR by donating vaccines, investing in community programmes and providing training and support for the introduction of screening and vaccines.

Labs for Life

In an effort called 'Labs for Life,' PEPFAR partnered with Becton, Dickinson and Company (BD) from 2007 to 2012 to support the strengthening of laboratory systems in Ethiopia, Kenya, Mozambique, South Africa and Uganda. As the USA government counterpart in this partnership, CDC provided guidance in disease prevention, patient monitoring and surveillance, while BD sent 75 fellows to the four countries to complete short-term assignments related to assessing and mentoring laboratory staff. A detailed account of this partnership and its effectiveness in increasing service delivery and impact on laboratory systems has been created and shared by BD [12].

AstraZeneca

In 2016, PEPFAR and AstraZeneca launched a 5-year, $10 million partnership to expand access to and optimize existing HIV/AIDS services while providing hypertension services to adult men, a difficult population to engage in HIV testing and care. For PEPFAR, the ability to make hypertension screening desirable to men alongside HIV/AIDS services supports programme-wide efforts to identify harder-to-reach patients for HIV testing and treatment. Through joint implementation, AstraZeneca is able to leverage existing health systems infrastructures to reach new markets, while PEPFAR is able to better reach at-risk populations to achieve the goal of epidemic control [13].

Implementation at country level

Global partnerships are critical for ensuring political leadership, financial resources and technical collaboration. However, they are of value only if implementing organizations capitalize upon the political leadership, avail themselves of financial resources and coordinate technical inputs effectively. The most important leadership and coordinating organization is government. However, financial and human resource limitations pose barriers to comprehensive national and local health service interventions. In such situations, local partnership organizations can fill gaps by uniting government, academic and community interests together. One example of such in-country work is the Academic Model Providing Access to Healthcare (AMPATH). AMPATH, a Kenya-based partnership between Moi University, Moi Teaching and Referral Hospital (MTRH), and a consortium of North American

academic medical centres, responds to the health needs of the surrounding population in western Kenya through local partnerships, (most centrally with Kenyan Ministry of Health), drawing upon resources provided by global organizations.

Building upon investments by PEPFAR, US National Institutes of Health, and other funders, AMPATH blends disease-specific investments into a primary care base that provides services for HIV, maternal-neonatal-child health, hypertension, diabetes mellitus, mental illness, chronic lung disease, cervical and breast cancer, and food and income security. AMPATH aims to provide greater than 90% coverage for the community's acute and chronic primary care needs with nonphysician providers in an integrated, community-based, patient-centred delivery model [14–16]. In addition to creating effective community-based service delivery, a key benefit is the enhancement of community-based engagement in the health system, resulting in increased health system accountability, engendered by community participation. At higher levels of the health system, AMPATH builds subspecialty care capacity for managing complex and more advanced disease [17–20]. AMPATH's platform for care has also created multiple opportunities for research and training activities [21,22].

An outpatient, electronic medical record system (EMR) is critical to integrating service delivery across all levels of health systems, and across diseases. This system also supports robust monitoring and evaluation, quality improvement, and clinical and operational research [23], which is a critical and synergistic dimension of partnership-based programming. In addition to the EMR, AMPATH employs mobile health/mobile phone to support community health workers to deliver home-based and other remote counselling, testing and referral services, and integrated laboratory system to provide basic laboratory services at local levels, and coordination across diseases for those to feed into reference laboratory. These approaches are considered best practices for other programs to provide integrated service delivery, including for NCDs. AMPATH and the Kenyan MOH are working together to demonstrate how these partnerships, and integrated interventions, can encourage domestic health financing, a critical step towards the sustainability of these interventions towards universal health coverage.

Discussion

Strategic global partnerships are necessary to realize an effective response to the HIV/AIDS epidemic, and will also be critical for an effective response to the emerging NCD epidemic in LMICs. For HIV/AIDS, partnerships have focused on funding and technical support for service delivery, introduction of needed health commodities and political advocacy. Even with massive attention and funding directed towards combatting and mitigating the impact of HIV/AIDS, gaps still exist among global organizations for a focused commitment to support health systems capacity development, operational research and a necessary path towards long-term sustainability and transition.

The WHO Global Action Plan for the Prevention and Control of NCDs 2013–2020 (World Health Assembly Resolution WHA66.10) demonstrates political will to control the emerging epidemic of NCDs. Appropriately, the second of the six objectives of this Action Plan is 'To strengthen national capacity, leadership, governance, multisectoral action and partnerships to accelerate country response for the prevention and control of noncommunicable diseases'. Following this Action Plan, the SDGs were developed and ratified by the global health community. The SDGs now address NCDs as well as infectious diseases and include the goal of universal health coverage. However, without dedicated funding to committed country and global partnerships, progress towards the Global Action Plan and health-related SDGs will be stunted. Ideally, the global commitment to NCD reduction will lead to concomitant donor funding, along with LMIC domestic funding. However, it seems realistic to expect that the LMIC/domestic share of this vital work will be a larger proportion of the response than is observed for HIV epidemic reduction.

In this review of a convenience sample of HIV-related global partnerships, we found that the global community has supported funding and technical assistance for HIV service delivery, introduction and availability of health products and advocacy to mitigate the HIV epidemic (Table 1). There is growing attention to sustainability and increasing domestic financial and technical capacity. Despite the important work of in-country partnership organizations to strengthen health systems, and to conduct implementation research to improve programmes, this is not a primary focus among the major international global health partnerships. Robust evaluation and research of integrated programmes, such as what AMPATH produces, is critical. Yet, large global organizations working to reduce the impact of the HIV epidemic contribute substantially to the development of platforms of care, importantly focusing on cross-cutting elements of health systems that can be leveraged across different diseases.

Conclusion

Keeping in mind that this review is limited by the small number of partnership organizations assessed and the qualitative methods used to draw conclusions, we believe that there are lessons to be learned from the world's response to the HIV epidemic, which can be applied

Table 2. Lessons learned from analysis of partnerships to address the HIV/AIDS epidemic, to inform a global response to the noncommunicable disease epidemic.

Multiple partnerships are needed to address a global health epidemic (see Table 1)
Partnership contribution, which can be financial and/or technical, is important for many areas of critical support
There are different types of partnerships that play a role: e.g. multilateral, bilateral, public private, national. All are important.
HIV/AIDS partnerships focus support on activities important to epidemic control (service delivery, commodity delivery, political advocacy) but have limited focus on some important areas of support (sustainability, implementation research for improved service delivery, comprehensive health system building)
Partnerships created to address the global HIV/AIDS epidemic could serve as models and/or themselves be potentially adapted for addressing the global NCD epidemic

NCD, noncommunicable disease.

to the emerging response to global NCD epidemics (Table 2).

This analysis leads us to consider whether some of these global partnership organizations need to be replicated for NCDs since NCD service-delivery has many of the same health system needs as HIV service-delivery, or whether some of the existing partnership organizations and/or initiatives could themselves adapt to play a greater role in the prevention and control of NCDs in LMICs. No matter the path taken, addressing the NCD epidemic in LMICs will require country commitment and global will to provide the financing, technical support, access to health products, advocacy, operations research needed to improve health systems and support LMICs countries with high burdens of NCDs.

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MJ works for Gates Foundation; DVZ works for UNAIDS; LK works for US National Institutes of Health; AG and SK work for AMPATH.

Conflicts of interest

None.

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