Toward a systemic research agenda for addressing the joint epidemics of HIV/AIDS and noncommunicable diseases

Robert Geneau and Greg Hallen

A growing proportion of people living with HIV/AIDS also struggle to cope with one or several noncommunicable diseases (NCDs), particularly as they age. The two epidemics being intertwined, there is increasing recognition that there should be closer advocacy, policy and programmatic links between HIV and NCDs. The objective of this paper is to discuss the development of a research agenda geared towards informing the design and implementation of programs and policies truly grounded in a co-benefits approach. Tackling the joint epidemics of HIV/AIDS and NCDs in Africa will require for research funders and private and foreign aid donors to be bold, visionary and to commit to long-term research investments in order to evaluate the effects of natural policy experiments and complex interventions.

Keywords: noncommunicable diseases, HIV/AIDS, sub-Saharan Africa, population health

Introduction

The articles presented in this supplement bring to light an important consequence of the joint epidemics of HIV and noncommunicable diseases (NCDs) in sub-Saharan Africa: that a growing proportion of people living with HIV/AIDS also struggle to cope with one or several NCDs, particularly as they age. As Hirschhorn et al. [1] point out, the benefits of having effective antiretroviral therapy (ART) delivery models to improve and prolong the life of people living with HIV/AIDS are now threatened by the increased prevalence of a range of NCDs that often cause premature morbidity and mortality in that population.

For an organization like the Canadian International Development Research Centre (IDRC), which funds research on important development issues, such findings are valuable for informing strategic decisions about global health research priorities. This brief commentary provides an overview of some of the main implications of these findings on a global health research agenda. A key message is that researchers and policymakers should never lose sight of the primary causes of the joint epidemics of HIV/AIDS and NCDs in sub-Saharan Africa.

Research to strengthen and reconfigure health systems

Additional research and surveillance to document trends in comorbidities among subgroups of HIV-positive individuals as well as intervention research projects investigating ways of increasing comprehensiveness of care are needed to inform the development of appropriate primary care service delivery models. There have been numerous calls to action for strengthening and reconfiguring health systems in sub-Saharan Africa (SSA) in a way that cuts across vertical silos [2] and to also leverage the lessons learned from HIV scale-up to confront NCDs [3]. There are examples of disease-specific service delivery programs that have been expanded to include a wider range of services, very often through the (re)training of primary care providers [4,5], including at the community level for increasing early detection or by developing integrated clinical guidelines [6]. Several experts have, however, pointed out that an ‘always good’ versus ‘always bad’ stance on integration is not helpful and that it should be seen as a continuum [7,8]. Research is still needed to determine exactly what services should be packaged together and what ‘integration’ really means in...
different settings with contrasting burden of disease profiles.

Rigorous evaluative research efforts can inform appropriate scale-up of integrated programs, tailored to different settings and populations. As part of this broad agenda of strengthening health systems, a number of experts have identified more specific research questions related to the appropriateness of ART treatment protocols in the presence of NCDs or their risk factors [9]. The answers to these questions will have implications for treatment protocols related to both HIV and NCDs in order to adequately address the consequences of the joint epidemics.

The relevance of noncommunicable disease prevention to the fight against HIV

A focus on the management of comorbidities provides the first ‘hook’ for building the case for action for addressing the joint epidemics of HIV and NCDs. The response of the health sector translates into disease management services that can be counted and health outcomes that can be monitored on an ongoing basis, making the ‘return on investments’ visible over a relatively short period. A broader but equally critical research priority, however, is to demonstrate more clearly how multisectoral efforts to prevent NCDs at the population level would bring distinctive long-term health benefits to people living with HIV.

There is accumulating evidence that the risk factors common to several NCDs can have a significant influence on the course of HIV disease. Alcohol use, for example, is associated with a significant decrease in ART adherence, which, in turn, is associated with higher viral loads and lower CD4 cell counts [10,11].

People with HIV disease are also more likely to smoke than healthy people. Smoking weakens the immune system and interferes with normal lung function, making it more difficult for people living with HIV to fight off serious HIV-related infections [12]. Smoking can also interfere with processing of medications by the liver and make it more likely to experience nausea and vomiting from taking HIV medications [13,14]. Finally, smoking also increases the risk of some long-term side-effects of HIV disease and treatment. These include osteoporosis (weak bones that can lead to fractures) [15] and osteonecrosis [16].

Physical inactivity can also impact the course and management of HIV. The use of ART is associated with changes in body fat deposits and metabolic alterations. In some HIV patients, the changes are characterized by increased central body fat accumulation, including visceral adipose tissue. Morphologic and metabolic disturbances result in impaired body image and a risk of cardiovascular diseases and diabetes [17]. Regular physical activity is a safe and effective strategy for evolving morphologic and metabolic disorders in adults infected with HIV receiving HAART, and improves their quality of life [17,18].

Research to inform the development of more robust NCD prevention policies would directly benefit people living with HIV/AIDS. There is also a need to gather evidence about how NCD population health interventions can benefit all population groups equally, including people living with HIV/AIDS.

Research on the causes of the causes of the joint epidemics

The process of seeking interventions that bring cobenefits and contribute the most to improve global health inescapably takes us back to actions on the social determinants of health. From a research perspective, this remains a challenging area. Research funding is difficult to secure for projects that seek to assess the impact of societal shifts of interventions that require a longer period and sustained effort across sectors before delivering detectable population health and development benefits [19].

There is an increasing body of literature about the relationships between HIV/AIDS and the social determinants of health. In the North American context, the most important social determinants that can influence the vulnerability to HIV infection or the course of the disease once infected include emotional and physical abuse during childhood as well as inequities based on income, race and sex [20]. In sub-Saharan Africa, the literature on the social determinants of HIV infection is increasingly nuanced, especially in the case of a structural determinant such as income [21]. Although HIV infection rates are highest in poor countries, data from demographic and health surveys support a dynamic interpretation of epidemic trends: in wealthier regions/countries in SSA, individuals with less wealth are more likely to be infected with HIV, whereas in poorer regions/countries individuals with more wealth are more likely to be infected with HIV [22]. Income and wealth inequalities are crucial factors, but may have differential effects across SSA.

There are also increasing research efforts on the upstream drivers of NCDs. There is evidence to support the framing of NCDs as diseases of poverty, even if all population groups are affected by the epidemic. NCDs
can both be seen as one of the causes of poverty (e.g., due to catastrophic health expenditures, loss of productivity, etc.) and as one of the consequences of poverty (e.g., barriers in accessing healthcare, living in physical or social environments that promote unhealthy behaviors, etc.) [23]. Just like in the case of HIV, wealth and education act as protective factors in the case of many NCDs.

Understanding better, through interdisciplinary research, the complex pathways linking the social determinants of health and the joint epidemics of NCDs and HIV within sub-Saharan Africa could help reshape the development agenda toward more effective and sustained intersectoral action. In order for this to happen, some have called for the ‘Africanization’ of the social determinants of health, arguing for the need to better understand better country-specific conditions in order to inform local actions [24]. Research in this area is essential in order to ensure that economic growth at the national level is not accompanied with increased health inequities.

Conclusion

This supplement adds to the increasing body of evidence demonstrating the interrelationships among HIV/AIDS, aging and NCDs. In a more generic sense, it highlights the fact that development issues cannot be separated. This is not new, and several projects funded by IDRC have come to similar conclusions, for example, by exploring the links between HIV/AIDS and food insecurity and by recognizing that both challenges are now so intertwined that they cannot be compartmentalized [25].

Aging and NCDs also need to be part of that equation and of the development agenda in general. As others have pointed out, the common separation between NCDs, child mortality and infectious syndromes among development programs is not helpful, as it may obscure interrelationships of illness affecting those living in poor households [26]. A recent Lancet Commission that conducted a cross-sectoral analysis of the Millennium Development Goals concluded that future goals should be built on a shared vision of development, and not on the bundling together of a set of independent development targets [27].

There are clear implications for international and domestic research funding organizations supporting projects in low-income and middle-income countries as well as challenges.

For strengthening health systems, there is a need to support local research efforts on the pragmatic ways to increase integration. Research on integration options should examine how disease-specific initiatives can support work on other diseases, and in turn be strengthened by more horizontal programming.

Acknowledging the complex interrelationships between different health development challenges should also translate into supporting research programs and projects that seek to address the ‘causes of the causes’ of ill health, especially given the international consensus that has emerged in recent years around the importance of tackling the social determinants of health.

The short-term challenges are two-fold. The first is that the needed interdisciplinary research capacity to adopt such a systemic perspective to health and development has not yet reached full maturity in both developed and developing countries. The tendency toward overspecialization may not be a major issue as long as a critical mass of scholars who can work across disciplines exists to connect the dots and inform the design of development programs and sound public policies. The presence of this ‘critical mass’ is not yet evident. The second challenge relates to the existence of sometimes unrealistic expectations about the role of research, how quickly evidence can be translated into practice or policy and, in turn, how rapidly these policies translate into population health and socio-economic benefits. The complexities of research impact are not always fully recognized, although significant efforts have been made in recent years to systematize the monitoring of the different pathways through which research can influence practice, program and policy.

Tackling the joint epidemics of HIV/AIDS and NCDs in Africa will require for research funders and private and foreign aid donors to be bold, visionary and to commit to long-term research investments in order to evaluate the effects of natural policy experiments and complex interventions and, ultimately, to inform the design of programs and policies truly grounded in a co-benefits approach.

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Conflicts of interest

There are no conflicts of interest.

References


