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SCALING UP NON-COMMUNICABLE DISEASE CONTROL: LESSONS TO BE LEARNT FROM THE INFECTIOUS DISEASE PARADIGM IN KENYA

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To the Editor in Chief

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ABSTRACT

Non-communicable diseases (NCD) are emerging as the leading cause of morbidity and mortality globally, with the greatest rise in incidence of cardiovascular disease cases observed in Sub-Saharan Africa. This is in addition to the heavy burden of infectious diseases already present in this setting.

Describing the cross-cutting epidemiology of NCDs and infectious diseases with focus on the interaction between tuberculosis and diabetes mellitus, HIV and cardiovascular disease, HIV and cervical cancer as well as assessing the disparities in funding and service delivery systems between NCDs and infectious diseases; we review this rising double burden of infectious and non-infectious diseases and propose four lessons that can be learnt from the HIV response and adapted to inform the scale up of NCD control in Kenya which are also applicable in other African countries.

INTRODUCTION

WHO estimates that 38 million deaths annually are due to non-communicable diseases (NCDs) worldwide, with a whopping 75% of these occurring in low and middle income countries (LMICs) (1). In addition, 95% of the global tuberculosis (TB) deaths occurred in LMICs with about half a million people developing MDR-TB in 2013 (2). Sub-Saharan Africa still remains the most affected region by HIV, with 70% of the global total of new infections occurring here (3).

Drawing closer home, this grim picture remains. As of 2013, our estimated national TB incidence was 268/100,000 people (4,5). KAIS 2012 put our HIV prevalence at 5.6%, which was a decline from 2007. However, HIV prevalence was highest among persons aged 25-34 years in 2007 but in 2012, the highest prevalence was among persons aged 45-54 years (6).

Interestingly, our last reported prevalence of diabetes is 4.5% reported five years ago (7). There are no other more recent national figures. The Nairobi cancer registry estimates the incidence of cancer at 39,000 new cases, with approximately 70% deaths each year, and this is largely based on hospital-reported figures (8). A more recent article reported during the UN Interagency Taskforce on NCDs visit to Kenya last year quotes 27% of mortality in Kenyan adults being as a result of NCDs, with the probability of dying too young from these conditions at 18% (9).

Communicable and non-communicable disease: Cross-cutting epidemiology

Tuberculosis and Diabetes Mellitus: Historically, an association has been observed between diabetes mellitus (DM) and TB (10–12). More recently, epidemiologic studies investigating this relationship have demonstrated an increased risk of TB among people with DM (13–16). A few more suggest that TB induces temporary hyperglycemia (17–19). There is need for concern over the merge of these two epidemics especially in countries experiencing increase in DM prevalence and already have a high TB burden such as India and China; and Kenya is on the fast-track to join such countries (5,20).

The mean annual cost for diabetes care ranges between \$2,100 and \$11,400 (21). This poses a huge financial burden especially in countries such as Kenya where majority of people pay for healthcare services out of pocket. In most areas diagnostic and treatment services for complications arising from diabetes are not readily available, hence socio-economic status plays a major role in determining treatment options and access to quality diabetes care. Poor glycemic control is associated with increased risk of TB incidence as well as poor TB treatment outcomes.

HIV and Cardiovascular Disease: HIV-infected adults are at an increased risk of cardiovascular diseases (CVD) including myocardial infarction and hypertension. They also are at risk of metabolic diseases such as dyslipidemia, insulin resistance with resultant

glucose intolerance, which further worsen their cardiovascular risk profile (22). Several studies have shown that this may be attributed to both the virus infection itself and its attendant chronic inflammation as well as toxicity from the antiretroviral (ARV) drugs (23,24).

More so, with increased access to life-saving ARV therapy, many HIV-infected people are living longer and hence are at an increased risk of CVD associated with age. With 2.2 million adults living with HIV in Kenya (6), this is an impending epidemic. With limited access to proper and timely diagnosis of these cardiovascular diseases due to unawareness, lack of proper diagnostic facilities such as lipid profile tests or angiograms and high costs of both diagnosis and management, CVD will be an added economic burden to this population who are often economically vulnerable.

HIV and Cervical Cancer: The Human Papilloma Virus (HPV) is known to cause cervical cancer. In Kenya today, the incidence of cervical cancer is approximately 25/100,000 women (8). HIV-infected women are at a higher risk of acquiring HPV and cervical cancer, with the HIV-infection being associated with faster progression of cervical cancer. While concerted efforts by multiple stakeholders in the health sector have managed to raise awareness and promote screening for cervical cancer, these are not routinely available and treatment facilities are limited, with radiotherapy being available in the public sector only at Kenyatta National Hospital.

Disparity in funding and service delivery

The funding mechanisms of infectious and non-communicable diseases are quite different. The delivery of healthcare services addressing these two issues is also different. Generally, though a signatory of the Abuja declaration, the government of Kenya has made less than adequate budgetary allocations towards health. Nevertheless TB and HIV are largely donor-funded; with the government through its National AIDS & STI Control Programme (NAS COP) and National Leprosy Tuberculosis and Lung Diseases Programme (NLTP) receiving a huge chunk of their money from The Global Fund. There are numerous other aid organizations that also fund efforts towards TB, HIV, malaria and other communicable diseases, including PEPFAR.

With time, this had led to disproportional development of these vertical programs relative to the general healthcare systems. In most public health facilities, one often finds a relatively new or newly renovated building housing the comprehensive care center for HIV-infected patients and the TB clinic. Services pertaining to these two infections are also free or highly subsidised. However, any other co-morbidity affecting the patient but not

directly attributable to the HIV or TB infection is not addressed. There may be an attempt to screen for some non-infectious co-morbidity but the burden of management for such rests solely on the patient.

On the other hand, non-communicable disease funding relies solely on government budgets. While there's a population level survey on the status of HIV in Kenya every five years (KAIS), there hasn't been a national survey on diabetes or hypertension. The Nairobi Cancer Registry has so far produced one comprehensive report released 2006 covering its first 3 years of activity between 2000 and 2002 (25). Facility level disparities in terms of service delivery for HIV versus NCDs are glaring. It's not uncommon to find near-absence of appointment registers, appropriate medical records, standardized treatment protocols and pharmacy services in a diabetic clinic—all essential for continued chronic care—despite all these being available in the HIV clinic within the same facility.

Lessons from infectious disease programs: While HIV and other silo (vertical) programs have had their shortcomings, their scale-up over the last decade has led to increased access to treatment with remarkable impact on the epidemic burden of infectious diseases. This experience may provide valuable insight to policy makers and other stakeholders as they consider urgent scale-up of NCD control services.

1. Defining and characterizing the population burden of NCDs

The role of basic science and epidemiology research cannot be overemphasized. Lack of data on the burden of disease of even common NCDs such as hypertension precludes evidence-based planning for NCD control. Not only do we need to know the burden but also interrogate the causes. What are the socio-economic changes associated with increased risk? Are the emerging risk factors e.g. stress and mental health issues having a greater impact on the risk of NCDs relative to the "traditional" risk factors? Incorporation of NCD modules to existing disease surveillance systems is crucial in regular collection of data on these and utilized for prevention and control activities. Furthermore, in this era of 'big data'; with data being generated or collected on almost every aspect of our daily lives e.g. how long you spend on the phone, how many calories are in your lunch meal etc.; this can be explored to try and understand some possible etiologies of the rise in NCDs.

2. Prioritization of the most effective and least expensive interventions

In the 2010 WHO Global status report on non-communicable diseases, some of the listed "best buys" for CVD prevention and control include availing counselling and multi-drug therapy for people at risk of developing an ischemic attack (26,27).

While emergency care is critical in saving lives, it defeats purpose to have shiny ambulances with the latest cardiac monitors rushing to take casualties to healthcare facilities that lack nitroglycerin that would otherwise save the patient's life. NCD care must be integrated into primary healthcare service delivery model if any impact on the epidemic is to be observed. High-quality HIV clinics can serve their clientele in the morning and the rooms used for nutritional counselling for diabetics in the afternoon; distribution of bed-nets can be coupled with blood pressure assessment for rural women. Innovative, efficient delivery platforms and synergies should be explored to enhance integrated healthcare provision.

3. *Public-Private Partnerships are key to sustainability in NCD prevention and control*

Another best buy for unhealthy diet and physical inactivity is reduced salt intake, replacing trans-fat with poly-unsaturated fats and raising awareness on physical activity²⁶. While an individual may be well aware of the above, their implementation capacity may be limited if basic commodities, e.g., bread or cooking oil contain high levels of these substances. The government so far has implemented some policies that address the parallel issue of under-nutrition by ensuring fortification of most basic foods. However, more policies that can improve health and reduce private expenditure on health and allow for financial risk protection should be developed. Effective implementation of such policies requires cooperation of major players in the industries. Different approaches can be employed to ensure compliance, e.g., with regards to salt reduction, there was voluntary uptake of salt targets by the food industry following extensive advocacy by both government and civil rights activists in the UK while in South Africa, this was through legislation (28)

With minimal donor funding targeting NCDs and huge variations in price between public and private facilities, creative approaches to funding for chronic NCD care need to be explored. This include improved purchasing efficiency, e.g., exploiting the power of bulk purchasing, tax reliefs, regulated mark-ups and many more.

4. *Primary Prevention is the key message*

With increased advocacy and awareness creation on NCDs, the message of prevention seems to be clouded by that of screening. While screening and early diagnosis is important in reducing morbidity and mortality associated with some of the NCDs, caution must be taken not to confuse the two. A lot of upcoming organizations seeking to address cancer issues in our context will screen in huge numbers, particularly among those who are socio-economically vulnerable. But is it ethical to identify someone as being at-risk of death due to cervical

cancer but offer them no hope because there are no radiotherapy machines available that can offer the required treatment? Shouldn't the key message be safe sexual practices to prevent acquisition of HPV? Interestingly, screening is not on the "best-buy" list. While early detection and intervention is important, the key message should be primary prevention. Corporate institutions should focus on activities that enhance healthier lifestyle habits for their employees, e.g., flexible work hours, workplace gyms or ergonomic furniture rather than pay higher premiums for insurance covers that include physiotherapy for chronic back pain.

Using the HIV program as an example, there are lessons to be learnt as well as synergy opportunities pertaining these four issues and many more (29,30). The HIV program has one of the most robust health information system. Tools and ICT infrastructure currently in use can be adapted and utilised for NCDs as well. Task-shifting and decentralisation of HIV services are two key elements that have facilitated scale-up of HIV services and can also be utilised as effective and relatively inexpensive approaches to integration of NCD services in primary care. Primary prevention has always been the thrust of HIV campaigns. Fervent clinical and translational research has led to the discovery and addition of Drugs (ARV therapy) to the ABC campaign.

While these four approaches are by no means exclusive nor exhaustive, their effective implementation would allow for a smoother segue into the double-epidemic.

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