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AN APPROACH TO DEVELOPING A NON-COMMUNICABLE DISEASE MODEL OF CARE IN SIERRA LEONE

Chiyembekezo Kachimanga[1] Paul H. Park[2] Marta Lado[1]

1. Partners in Health, Sierra Leone 2. NCD Synergies, Partners in Health, Boston, MA

ABSTRACT

Due to the rising and endemic burdens of non-communicable diseases (NCDs) in sub-Saharan Africa including Sierra Leone, innovative approaches to developing NCD care models are urgently needed and should leverage on lessons learned from other countries. We discuss an approach that can be used to develop NCD chronic care clinics in Sierra Leone with a focus on task-shifting, integrating care, developing an NCD package, developing and standardising guidelines, and piloting and decentralising NCD care to rural areas.

Corresponding Author Email:
ckachimanga01@pih.org

INTRODUCTION

Non-communicable diseases (NCDs) are the leading cause of death globally, contributing to over 70% of all deaths in 2016 (Global Burden of Disease Study collaborators, 2017). Sub-Saharan Africa (SSA) is one region of the world where the burden of NCDs is increasing, in addition to a very high burden of communicable diseases (NCD Countdown 2030 collaborators, 2018). Cardiovascular diseases and their risk factors are some of the commonest NCDs in SSA. For example, the prevalence of hypertension and diabetes has been reported as high as 46%, and 16% respectively (Dalal et al., 2011; Cappuccio et al., 2016). The rapid rise of cardiovascular diseases has been associated with changes in lifestyle, urbanisation and some common infectious diseases like HIV and tuberculosis (Nyirenda, 2016). For most rural areas, where the majority of people in SSA live, most cardiovascular diseases are undiagnosed and untreated due to weaker health systems. Furthermore, cardiovascular disease risk factors for urban areas may not apply to the rural poor. Instead, such patients tend to have unique, context-specific risk factors, including poverty and malnutrition (Bukhman et al., 2015).

Although limited data exist, Sierra Leone is not spared from the burden of NCDs. According to 2009 STEPS survey, about 35% of adults aged 25-64 years have hypertension. Nearly one in five adults aged 25-64 years old had smoking, drinking alcohol and overweight as cardiovascular risk factors (World health organisation (WHO) STEPS Survey, 2009).Currently, NCDs in general and cardiovascular diseases specifically contributes to 33% and 14% of all deaths.

Prevention of cardiovascular diseases is essential to reduce the current burden of NCDs, but it must be accompanied by treatment of these conditions at the primary and secondary health care levels for patients currently in care or currently diagnosed.

We discuss approaches to developing clinics for chronic care of patients with NCDs, especially for cardiovascular diseases, in health facilities of Sierra Leone.

Piloting decentralised models of NCD clinics

In order to achieve equity and universal access to NCD care, primary and district-level facilities need to be identified to pilot the implementation of the NCD programme. Despite recognising that rural communities face significant challenges with NCDs and other conditions, there is an inequitable distribution of resources with urban areas and referral hospitals benefitting from the greatest resources in Sierra Leone. For example, in 2016 the rural population (which is about 62% of the total population) was served by only 30% of the health workers (Ministry of Health and Sanitation, 2017). In order to ensure a more equitable approach, the chosen pilot facilities should reflect where the

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greatest need exists: rural district hospitals and community health centres. The delivery model at these key health facilities should be continuously modified through quality improvement followed by rigorous monitoring and evaluation. Upon production of an effective model, the lessons learned can then inform national scale-up of integrated NCD clinics.

Non-physicians can provide cardiovascular disease care in district hospitals and community health centers

With a ratio of 3 physicians per 100,000 people in 2016, it is challenging to have physician-led NCD clinics in health facilities in Sierra Leone (Ministry of Health and Sanitation, 2017). An alternative approach is to task-shift the provision of cardiovascular disease care to non-physicians such as State Enrolled Community Health Nurses or Community Health Officers. Lessons can be learned from the HIV programs, which have similar principles of management when compared to NCDs. Task-shifting in HIV programs to non-physicians has largely been successful with non-inferior outcomes in comparison to physician-led clinics, including lower lost to follow-up rates (Emdin et al., 2013; Penazzato et al., 2014). A recent meta-analysis on task-shifting NCD care, including cardiovascular disease care, to non-physicians, showed improvements in screening, diagnosis and management of common NCDs. The quality and outcomes of care was similar to physicians-led NCD clinics in studies that measured this outcome, provided the non-physician health workers were supported by appropriate training, mentorship and standardised clinical protocols (Joshi et al., 2014). In Rwanda, task-shifting diabetes care to nurses plus accompanied clinical mentorship had good successes as the nurses were able to make the correct diagnosis, medication choices, routine laboratory monitoring and follow up plans in 94%, 86% 87% and 92% of the cases respectively (Ndayisaba et al., 2017). Similar successes with non-physician led clinics has been demonstrated in the management of chronic heart disease, hypertension, diabetes, sickle cell disease, asthma and epilepsy in Rwanda, Kenya and Malawi (Kwan et al., 2013; Wroe et al., 2015; Some et al., 2016; Habineza et al., 2017).

In Sierra Leone, task-shifting may be possible by utilising Community Health Officers and/or State Enrolled Community Health Nurses as these are two cadres of health workers with more staff availability than that of physicians. Community Health Officers are mid-level providers with 3 years of training and are responsible for providing all primary medical services in community health centers as well as district hospitals. In 2016, the country had over 15,000 Community Health Officers and a ratio of 50 to

100,000 people for State Enrolled Community Health Nurses (Ministry of Health and Sanitation, 2017).

Integration of health services is essential for the establishment of NCD clinics

In many developing countries, the health system is organised to primarily respond to infectious and maternal health conditions, therefore, innovative ideas to deliver cardiovascular disease care need to be identified (Jaffar et al., 2013). Patients with cardiovascular diseases require more than treatment; they require time for counseling on risk factor reduction, importance of adherence, and frequent appointments to clinics. This spectrum of care necessitates establishing chronic care clinics within the existing facilities to allow for regular management of patients. In chronic care clinics, patients have dedicated primary care providers that deliver life-long cardiovascular care in its entirety for prevention, screening, treatment and regular follow-ups. The demand for innovation becomes even more urgent in rural areas, where consistent resources and access to care are more challenging.

One approach to answer this call for innovation is integration within a single chronic care clinic as to improve efficiency and resource allocation within the health system. Cardiovascular diseases are related conditions, which oftentimes present with patients having multiple cardiovascular conditions and risk factors in addition to other chronic communicable diseases like HIV. Cardiovascular

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diseases should not only be integrated amongst each other but can also be integrated with other NCDs like chronic obstructive lung diseases, epilepsy and mental health. More recently, the burden of NCDs and HIV has been explored, with emerging evidence that HIV and NCD clinics can be integrated (El-sadr et al., 2018). HIV and NCD integration leverage the existing platform of HIV delivery of care and resources within the HIV program to allow for management of patients with NCDs whether they have HIV or not (Wroe et al., 2015). Ultimately, choices will need to be made on which integrated conditions will be managed within cardiovascular clinics in Sierra Leone.

Developing an NCD package of care

Developing an integrated NCD care package relies on identifying 'best buys' in management of these conditions. These 'best buys' are proven and cost-effective interventions for NCD control. For cardiovascular disease, chronic obstructed lung diseases and other selected NCDs, WHO Package of Essential NCDs (PEN) Interventions for Primary Care in Low Resource Settings provides one of the options for developing an NCD package of care (WHO, 2010). The package contains cost-effective, evidence based and affordable interventions, tools and aids for screening, as well as guidelines for prevention and control of common NCDs including stroke, heart attack, diabetes, hypertension, asthma and COPD. The WHO PEN was formulated for physicians and non-physicians at the primary care level of low resource settings like Sierra Leone. The package of NCD care within WHO PEN, therefore, depends on the choices of NCDs that will be managed within health centers. In the near future, district hospitals can focus on addressing more severe NCDs, such as type 1 diabetes and rheumatic heart disease.

Reviewing policies and guidelines to reflect the current NCD needs

Updating the current national NCD action plan to reflect recent changes in NCD burden is needed, since the current Sierra Leone NCD strategic plan expired in 2017. Additionally, streamlining NCD care within health facilities is urgently needed. This include developing and standardising management guidelines for cardiovascular diseases appropriate for Community Health Officers and State Enrolled Community Health Nurses, developing a plan of mentorship and supervision of cardiovascular disease clinics, investing in cardiovascular disease drugs and equipment, standardising procurement and distribution of supplies in health facilities, and reviewing NCD indicators and the national reporting system for NCDs. Finally, as limited data on NCDs currently exist in Sierra Leone, strengthening research capacity on cardiovascular diseases and other NCDs is also needed.

Conclusions

The NCD burden is high in SSA and NCD care needs to be provided to already diagnosed patients. We have discussed how this can be implemented in Sierra Leone with a focus on decentralising care to rural facilities, task-shifting to non-physicians, adopting an integrated NCD package, streamlining management of cardiovascular diseases and piloting decentralised NCD clinics especially to rural facilities.

Conflict of interest

Opinion expressed in this commentary are the opinion of the authors. They do not reflect the opinion of their employment agencies.

REFERENCES

Cappuccio, F.P. & Miller, M. 2016. Cardiovascular disease and hypertension in sub-Saharan Africa : burden, risk and interventions. *Internal and Emergency Medicine*. 11(3):299–305. DOI: 10.1007/s11739-016-1423-9.

Dalal, S., Beunza, J.J., Volmink, J., Adebamowo, C., Bajunirwe, F., Njelekela, M., Mozaffarian, D., Fawzi, W., et al. 2011. Non-communicable diseases in sub-Saharan Africa : what we know now. (April):885–901. DOI: 10.1093/ije/dyr050.

El-sadr, W.M. & Goosby, E. 2018. Building on the HIV platform : tackling the challenge of non-communicable diseases among persons living with HIV. *AIDS*. 32(suppl 1:S1–S3. DOI: 10.1097/QAD.0000000000001886.

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Emdin, C.A., Chong, N.J. & Millson, P.E. 2013. Non-physician clinician provided HIV treatment results in equivalent outcomes as physician-provided care : a meta-analysis. *Journal of International AIDS society*. 16.

Bukhman, G., Bavuma, C., Gishoma, C., Gupta, N., Kwan, G.F., Laing, R. & Beran, D. 2015. Endemic diabetes in the world's poorest people. *The lancet endocrinology*. 3(June).

Global Burden of Disease Study collaborators 2016. 2017. Global, regional, and national age-sex specific mortality for 264 causes of death, 1980 – 2016 : a systematic analysis for the Global Burden of Disease Study 2016. *Lancet*. 390:1151–210. DOI: 10.1016/S0140-6736(17)32152-9.

Habineza, H., Mutumbira, C., L, H.-G.B., Borg, R., Gupta, N., Tapela, N., Dusabeyezu, S., Ngoga, G., et al. 2017. Treating persistent asthma in rural Rwanda : characteristics, management and 24-month outcomes. *International Journal of Tuberculosis and Lung Diseases*. 21(10):1176–1182.

Jaffar, S., Amberbir, A., Kayuni, N., Musicha, C. & Nyirenda, M. 2013. Viewpoint: Scaling up testing services for non-communicable diseases in Africa: Priorities for implementation research. *Tropical Medicine and International Health*. 18(11):1353–1356. DOI: 10.1111/tmi.12180.

Joshi, R., Alim, M., Kengne, A.P., Jan, S., Maulik, P.K., Peiris, D. & Patel, A.A. 2014. Task-shifting for Non-Communicable Disease Management in Low and Middle Income Countries – A Systematic Review. *Plos One*. 9(8). DOI: 10.1371/journal.pone.0103754.

Kwan, G.F., Bukhman, A.K., Miller, A.C., Ngoga, G., Mucumbitsi, J., Bavuma, C., Dusabeyezu, S., Rich, M.L., et al. 2013. A Simplified Echocardiographic Strategy for Heart Failure Diagnosis and Management Within an Integrated Noncommunicable Disease Clinic at District Hospital Level for Sub-Saharan Africa. *JACC: Heart Failure*. 1(3). DOI: 10.1016/j.jchf.2013.03.006.

Ministry of Health and Sanitation. 2017. *Human Resources for Health Strategy 2017-2021*.

NCD Countdown 2030 collaborators. 2018. NCD Countdown 2030 : worldwide trends in non-communicable disease mortality and progress towards Sustainable Development Goal target 3 . 4. *The Lancet*. 392:1072–88. DOI: 10.1016/S0140-6736(18)31992-5.

Ndayisaba, A., Harerimana, E., Borg, R., Miller, A.C., Kirk, C.M., Hann, K., Hirschhorn, L.R., Manzi, A., et al. 2017. Research Article A Clinical Mentorship and Quality Improvement Program to Support Health Center Nurses Manage Type 2 Diabetes in Rural Rwanda. *Journal of Diabetes Research*. DOI: 10.1155/2017/2657820.

Nyirenda, M.J. 2016. Non-communicable diseases in sub-Saharan Africa : understanding the drivers of the epidemic to inform intervention strategies. *international Health*. 8:157–158. DOI: 10.1093/inthealth/ihw021.

Penazzato, M., Davies, M., Apollo, T., Negussie, E. & Ford, N. 2014. Task-shifting for the Delivery of Pediatric Antiretroviral Treatment : A Systematic Review. *Journal of acquired immune deficiency syndromes*. 65:414–422.

Some, D., Edwards, J.K., Reid, T., Bergh, R. Van Den, Kosgei, R.J., Wilkinson, E., Baruani, B., Kizito, W., et al. 2016. Task-shifting the Management of Non-Communicable Diseases to Nurses in Kibera , Kenya : Does It Work ? *Plos One*. 11(1):1–9. DOI: 10.1371/journal.pone.0145634.

World Health Organisation STEPS Survey. 2009. The Prevalence of the common risk factors of NCDs in Sierra Leone.

World Health Organization. 2010. *Package of Essential Non-communicable (PEN) Disease Interventions for Primary Health Care in Low-Resource Settings*.

World Health Organisation. 2018. *Non-communicable Diseases (NCD) Country Profiles, 2018.*

Wroe, E.B., Kalanga, N., Mailosi, B., Mwalwanda, S., Kachimanga, C., Nyangulu, K., Dunbar, E., Kerr, L., et al. 2015. Leveraging HIV platforms to work toward comprehensive primary care in rural Malawi: The Integrated Chronic Care Clinic. *Healthcare*. 3(4). DOI: 10.1016/j.hjdsi.2015.08.0