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Why there is new hope for the care of chronic diseases in Africa

The PEN-plus strategy aims to improve access and care for non-communicable diseases in rural, low income areas and could revolutionise the care of chronic diseases in Africa, write **Matshidiso Moeti, Ana Mocumbi, and Gene Bukhman**

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Inequity has always been one of the biggest health concerns in African countries. For decades, we've witnessed the tragedy of African people in low income countries dying of severe, chronic non-communicable diseases because they can't access the care readily available in higher income countries. Fortunately, thanks to a promising new strategy called PEN-Plus, we are on the brink of a change that could save hundreds of thousands of lives—but only if African countries and the world rise to the occasion.

There have been breakthroughs and victories in healthcare and equity on the continent. Increasing access to prevention of malaria in pregnancy, antiretroviral drugs for HIV, and yellow fever vaccinations come to mind.¹ In each case, several factors combined to tip the scales towards universal health coverage, including an innovative strategy for delivering care, the political will to scale that strategy, a strong social movement that demands action, and the resulting global solidarity to mobilise resources.

These factors are now aligning to turn the tide against type 1 diabetes, sickle cell disease, and childhood heart diseases—conditions that together cause nearly 80 000 preventable deaths in the World Health Organization's African region every year.² But in many parts of Africa, lifesaving care for those conditions is only available at specialised hospitals in major cities, leaving little hope for those living in low income rural areas.

Global statistics bring this disparity into focus. A 10 year old child diagnosed with type 1 diabetes in sub-Saharan Africa, for example, will probably die before the age of 22.³ European children diagnosed at the same age will probably outlive them by more than 40 years.³ Sadly, this pattern of global inequality is consistent for people with sickle cell disease, childhood heart diseases, and other severe non-communicable conditions.^{2,4,5}

Fortunately, help is within reach. Over the past decade, with support from global non-governmental organisations, the ministries of health in Haiti, Liberia, Malawi, and Rwanda have refined an integrated healthcare delivery model called PEN-Plus that aims to alleviate the burden of non-communicable diseases on low income, rural communities by improving the accessibility and quality of care services.⁶

The name is a nod to WHO's existing package of essential non-communicable disease (PEN) interventions for primary healthcare.⁷ PEN-Plus complements the original package with an expanded focus on lifesaving care for people with severe

non-communicable diseases.⁸ PEN-Plus trains nurses and other providers to treat severe chronic conditions, secures lifesaving drugs and supplies, and brings care closer to home for the millions of African people in rural and peri-urban areas.

PEN-Plus decentralises the expertise and equipment required to treat severe non-communicable diseases and expands the footprint of available care beyond larger hospitals, making care more accessible to people who don't live in cities. The innovation lies in training the district health workforce to provide essential cardiac, endocrine, and hemoglobinopathy services in smaller clinic settings, lowering geographic barriers to access. Data have shown a 10-fold expansion in the number of patients receiving care for severe chronic conditions in health systems implementing PEN-Plus.⁹

Rwanda has been a front runner in the roll out of PEN-Plus, having scaled up from just three rural hospitals to now every district hospital in the country.⁹ Malawi's national scale-up is well under way, and eight more African countries are establishing their first PEN-Plus clinics.^{10,11} Building on this regional success, PEN-Plus introduction is beginning in Nepal and Chhattisgarh State in India.

One common challenge with initiating PEN-Plus is getting enough time from specialist physicians to train the first cohorts of providers. Managing PEN-Plus conditions requires attention to detail and adherence to complex care pathways. Short didactic trainings are insufficient, and supervised clinical practice for at least three months is necessary to maintain the quality of care. PEN-Plus teams in Mozambique have found a creative solution: coupling new training sites with the placement of newly trained family medicine physicians at rural district hospitals.¹² Looking ahead, this approach could prove particularly effective for initiating PEN-Plus in large countries that will require training sites in many regions to achieve scale.

In August 2022, the 47 countries that comprise WHO's African region unanimously adopted PEN-Plus as the strategy to expand care for severe non-communicable diseases because it offers an efficient method for integrating services while ensuring ownership lies with each country's health leaders.¹³ But to save lives, the strategy requires continued support and commitment.

WHO is now mobilising ministries of health to support the implementation of PEN-Plus in 20 countries over the next three years. Still, there are barriers to overcome. Chief among these are the many other

serious challenges facing health systems across Africa, limiting countries' technical and financial capacity to expand PEN-Plus. That is where the PEN-Plus Partnership comes in.¹⁴ The partnership convenes leading organisations working on severe chronic conditions to collaborate to provide technical and financial support for the implementation of PEN-Plus.

By working in solidarity with patient advocates and global funders, we are optimistic that this partnership can marshal a movement to demand better care and health justice for African people with severe non-communicable diseases. Together, we can close gaps in chronic care in African countries and work towards the long deferred promise of health equity.

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- 1 World Health Organization Regional Office for Africa. Success Stories of WHO in the African Region: delivering achievements and making an impact. 2018. <https://www.afro.who.int/sites/default/files/2018-08/Success%20Stories%20Final%20-%20English.pdf>
- 2 Bukhman G, Mocumbi AO, Atun R, et al. Lancet NCDI Poverty Commission Study Group. The Lancet NCDI Poverty Commission: bridging a gap in universal health coverage for the poorest billion. *Lancet* 2020;396:1044. doi: 10.1016/S0140-6736(20)31907-3 pmid: 32941823
- 3 Gregory GA, Robinson TIG, Linklater SE, et al. International Diabetes Federation Diabetes Atlas Type 1 Diabetes in Adults Special Interest Group. Global incidence, prevalence, and mortality of type 1 diabetes in 2021 with projection to 2040: a modelling study. *Lancet Diabetes Endocrinol* 2022;10:-60. doi: 10.1016/S2213-8587(22)00218-2 pmid: 36113507
- 4 GBD 2021 Sickle Cell Disease Collaborators. Global, regional, and national prevalence and mortality burden of sickle cell disease, 2000-2021: a systematic analysis from the Global Burden of Disease Study 2021. *Lancet Haematol* 2023;10:-99. doi: 10.1016/S2352-3026(23)00118-7 pmid: 37331373
- 5 Kwan GF, Mayosi BM, Mocumbi AO, et al. Endemic cardiovascular diseases of the poorest billion. *Circulation* 2016;133:-75. doi: 10.1161/CIRCULATIONAHA.116.008731. pmid: 27297348
- 6 Partners in Health. The PIH guide to chronic care integration for endemic non-communicable diseases. Rwanda edition., 2011. https://www.pih.org/sites/default/files/2017-07/PIH_NCD_Handbook.pdf.pdf.
- 7 World Health Organization. WHO package of essential noncommunicable (PEN) disease interventions for primary health care. 2020. <https://www.who.int/publications/item/9789240009226>
- 8 World Health Organization. WHO PEN and integrated outpatient care for severe, chronic NCDs at first referral hospitals in the African Region (PEN-Plus). Report on regional consultation. ; 2020. <https://www.afro.who.int/publications/who-pen-and-integrated-outpatient-care-severe-chronic-ncds-first-referral-hospitals>
- 9 Niyonsenga SP, Park PH, Ngoga G, et al. Implementation outcomes of national decentralization of integrated outpatient services for severe non-communicable diseases to district hospitals in Rwanda. *Trop Med Int Health* 2021;26:-61. doi: 10.1111/tmi.13593 pmid: 33892521
- 10 Ruderman T, Chibwe E, Boudreaux C, et al. Training mid-level providers to treat non-communicable diseases in Neno, Malawi through PEN-Plus strategies. *Ann Glob Health* 2022;88:. doi: 10.5334/aogh.3750 pmid: 36062045
- 11 NCDI Poverty Network. PEN-Plus policy brief: decentralizing lifesaving care for severe NCDs. Oct 2022. https://static1.squarespace.com/static/55d4de6de4b011a1673a40a6/t/634ee3b2c1de6770460861ff/1666114484185/PEN-Plus_policy_brief_Oct-2022.pdf
- 12 Sabino Y, Francisco PA, Rambique ODC, Chavez Noya LA, Bucuane AJ, Jantsch AG. One swallow does not a summer make: twenty years of challenges and achievements of family medicine in Mozambique. *Afr J Prim Health Care Fam Med* 2022;14:-4. doi: 10.4102/phcfm.v14i1.3335. pmid: 35144448
- 13 World Health Organization. PEN-Plus – a regional strategy to address severe non-communicable diseases at first-level referral health facilities Lomé, Republic of Togo: World Health Organization Regional Office for Africa. 2022. <https://www.afro.who.int/sites/default/files/2022-07/AFR-RC72-4%20PEN-plus%20a%20regional%20strategy%20to%20address%20severe%20non-communicable%20diseases%20at%20first-level%20referral%20health%20facilities.pdf>
- 14 NCDI Poverty Network. PEC-Plus partnership. <https://www.ncdipoverty.org/penplus-partnership#:~:text=The%20overall%20mission%20of%20the,10%20by%20the%20year%202030.>