FORUM

THE PEN-PLUS STRATEGY FOR NONCOMMUNICABLE DISEASES

Doctors with Africa CUAMM has been working since 2022 to implement the WHO PEN-Plus model of care. Aimed at expanding access to services for those living with severe noncommunicable diseases (NCDs) in poor rural areas in resource-limited countries, the strategy also points up the importance of achieving universal health coverage (UHC) in such settings.

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FROM THE PEN MODEL TO THE PEN-PLUS MODEL

The treatment of severe noncommunicable diseases (NCDs) and their complications is typically available only in tertiary care hospitals, making NCD care services inaccessible to much of the population in low- and middle-income countries (LMICs)[1]. PEN-Plus, an innovative strategy adopted by WHO/AFRO in 2022, aims to improve access to care for patients living with severe NCDs such as type 1 diabetes, rheumatic heart disease, sickle cell disease, and others in poor rural and peri-urban areas in such countries.

The PEN-Plus model grew out of an earlier strategy, the WHO package of essential noncommunicable (PEN) disease interventions for primary health care, driven in part by the need to address the growing global burden of NCDs with complications. It focuses on fostering synergies between primary care networks (i.e., peripheral health facilities) and rural first referral hospitals (FRHs) – aspects that have been largely overlooked by global health policymakers and the academic community in recent years.[2-3].

To help FRHs strengthen their capacity to meet the needs of both the communities they serve and the primary healthcare network, PEN-Plus activities include working to improve the referral system between levels of care, launching integrated clinical services, and enhancing the skills of non-specialist health personnel such as nurses and general practitioners.

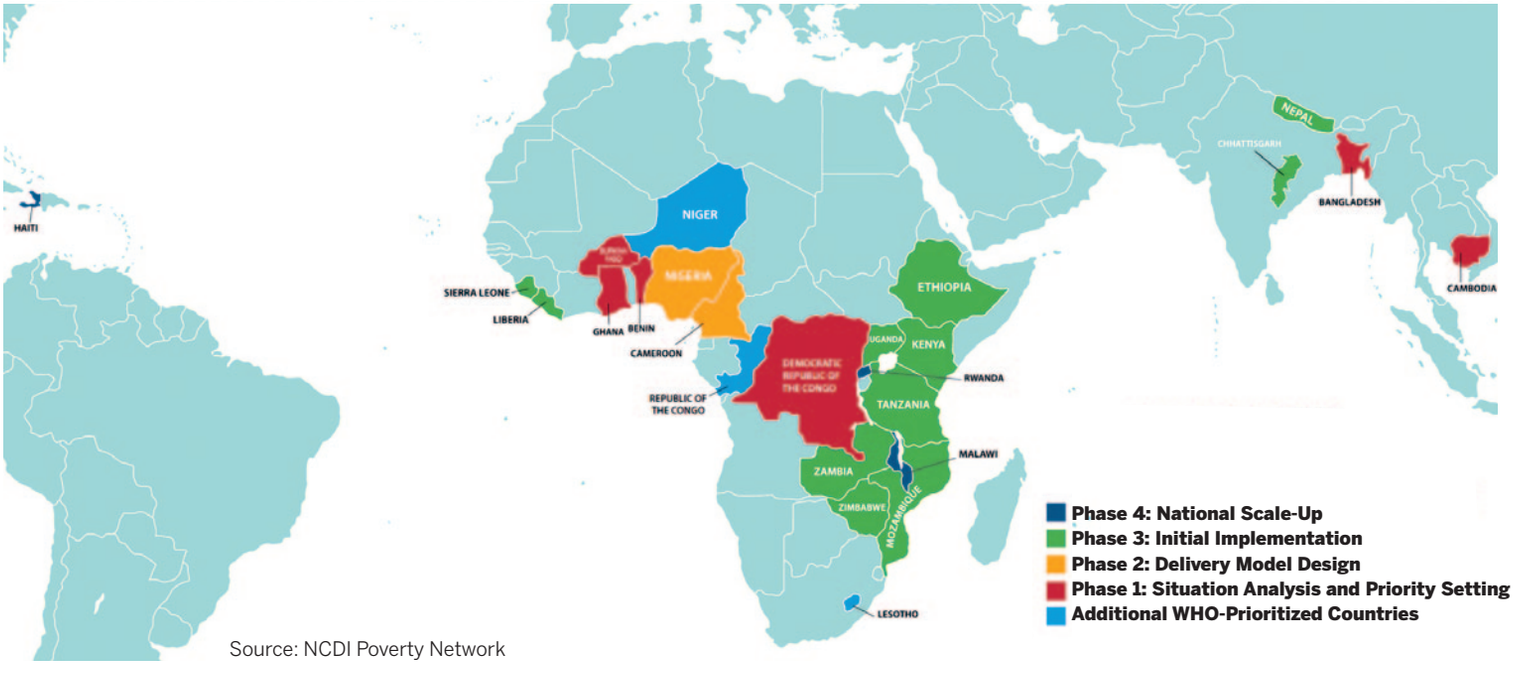
A MULTI-COUNTRY APPROACH AND THE ROLE OF OPERATIONAL RESEARCH

One of the strengths of the PEN-Plus strategy is its multi-country approach, which makes it possible to compare settings that are highly heterogeneous, whether in terms of security, poverty, health financing and/or service organization.

Supported by the Non Communicable Diseases (NCDI) Poverty Network, PEN-Plus was initially developed and scaled nationally in Rwanda.

At present, nine African countries and one state in India have launched PEN-Plus programs with the support of the NCDI

FIGURE 1 / MAP OF COUNTRIES WHERE PEN-PLUS HAS BEEN LAUNCHED AND OPERATIONAL PHASES



Source: NCDI Poverty Network

Poverty Network and other partners, including CUAMM in Sierra Leone and Mozambique (**Figure 1**)
The operational research that CUAMM conducts is also an integral part of the PEN-Plus program; its aim is to generate evidence for the model's effectiveness, equity, sustainability and scalability – or lack thereof.

THE CASE OF PUJEHUN DISTRICT HOSPITAL IN SIERRA LEONE

In 2022, Phase 3 of implementation of the PEN-Plus strategy was begun in Sierra Leone, in Pujehun, a rural district with 430,000 inhabitants and a health network consisting of a government referral hospital and over 50 health centers.
With the support of local health authorities, the first outpatient clinic in the hospital for the integrated management of NCDs (screening, triage, management of complications) was renovated and fitted out. A team consisting of 7 mid-level health workers – clinical technicians, nurses, and a nutritionist – supported by a doctor acting as trainer, supervisor and internal medicine department liaison was instituted. Intensive training on specific project-related topics was provided to both the hospital team and the team from the peripheral health centers. Instrumental and laboratory diagnostics and the dispensary were strengthened, and a patient-led data collection system was set up to enable the clinical management of patients in toto follow-up (referrals, appointments, check-ups, active search for lost patients), and socioeconomic profiling. Finally, activities to raise awareness about NCDs were conducted both in the hospital wards and in venues such as schools and markets.

2023 AND 2024 (JANUARY-SEPTEMBER) RESULTS

In just over a year and a half, some 2,061 patients were enrolled at or referred to the PEN-Plus clinic in Pujehun. A quarter of them were over 65, while 40.4% were aged between 45 and 64 years. 77.3% of the patients were residents of the district, while the rest came from neighboring ones. The most common diseases were hypertension (65%), diabetes (17.6%) and sickle cell disease (12.2%).
There were 211 ascertained comorbidities, 75% of which were hypertension and diabetes. Patients with complications, notably those with type 1 diabetes and sickle-cell disease, accounted for 33% of the cases. 952 patients, primarily women, have been in treatment or active since the program was initiated; 603 of all of the patients seen at the clinic (29%) have had a consultation in the last three months.
Until recently, consultations, tests and treatment were free of charge for all. However, due to the growing number of patients and budget restrictions, and in agreement with local health authorities, as of the third quarter of 2024 those with uncomplicated cases of type 2 diabetes mellitus and hypertension were required to pay for their treatment. As a result, in the last quarter under review (July to September), new cases declined by 35% and cases lost to follow-up grew by 70% compared to the previous quarter (April to June) – numbers broadly in line with the values of the first half of 2023.

SOME PRELIMINARY CONSIDERATIONS

We will limit ourselves to some preliminary considerations as we await the results of the comparative research involving 18 hospitals (including Pujehun) from 10 countries, which will assess clinical effectiveness, training and policy development[4].
NCDs in Sierra Leone represent an increasingly significant epidemiological burden. In the adult population, the prevalence of individuals with hypertension is 35%; with type 2 diabetes it is 8.3%. Despite their prevalence, the country's health system completely disregards severe conditions such as type 1 diabetes, rheumatic disease and sickle cell disease[5]. In fact, it is grossly unprepared to tackle the challenge of NCDs: fewer than 30% of health facilities offer screening services, fewer than 40% have NCD medications, less than 5% of the health budget is allocated to NCDs[6], and doctors specializing in internal medicine are a rarity.
Our experience in Pujehun shows that when free quality services are provided, demand grows exponentially, as does the phenom-

TABLE 1 / OVERVIEW OF THE DISTRIBUTION OF PATIENTS ENROLLED AT THE PEN-PLUS CLINIC IN PUJEHUN BY AGE (REFERENCE PERIOD: 2023-2024)

AGE–RANGE 0	FREQUENCY	PERCENT	CUM. PERCENT	
>65	519	25.18%	25.18%	
0 - 5	41	1.99%	27.17%	
6 - 17	235	11.40%	38.57%	
18 - 44	432	20.96%	59.53%	
45 - 64	834	40.47%	100.00%	
TOTALE	2061	100.00%	100.00%	

enon of bypassing, whereby hypertensive and diabetic patients bypass peripheral health facilities, often because they lack the skills and resources to manage even stable cases. This phenomenon is both well-known and understandable, but also concerning from a public health perspective, as it can lead to ineffective disease management and unequal access to care. It also can have a negative impact on the planning and management of health services by institutions[7].

To remedy this phenomenon in Pujehun, patient management has begun to be decentralized to several peripheral health facilities; the process needs to be strengthened further, including through community engagement. There is evidence that in isolated and disadvantaged areas, a control strategy based primarily on the involvement and responsibility of community health promoters can ensure adequate monitoring of the hypertensive patient population and improve their overall cardiovascular risk level[8]. This possibility has yet to be studied and tested.

NCDs AND UNIVERSAL HEALTH COVERAGE: AN ONGOING CHALLENGE

The issue of health financing and financial protection remains critical in Sierra Leone. Although the national plan stipulates the inclusion of NCDs in the package of guaranteed services, the latter are not part of the Free Health Care policy, which thus far is limited (and not always applied) to maternal and child services alone. Moreover, there are no plans for an insurance-style public financing system.

The country's strategic plan to tackle NCDs involves a total cost to the government of $8 per capita per year for five years, compared to a per capita expenditure of $43 in 2021, of which only $9.50 was provided directly by the government[9].

Not surprisingly, in 2020 out-of-pocket (OOP) spending by households in Sierra Leone reached 55.7% of current health expenditure (CHE), one of the highest levels in sub-Saharan Africa[10]. This OOP spending by patients was primarily for the purchase of essential medicines.

This data not only highlights the critical need to increase public, community, and international funding for healthcare in general, and for noncommunicable diseases (NCDs) in particular, but also raises – yet again – the pressing question of what type of organizational model could be adopted in the most disadvantaged and impoverished settings to treat the most severe NCDs and other significant diseases in an effective, equitable and sustainable manner[11]. The ongoing challenge to be addressed, in other words, is: which priority services should to be provided, to whom, with what resources and how.

NOTES

1 Bukhman G et al,. The PEN-plus partnership: addressing severe chronic noncommunicable diseases among the poorest billion. Lancet Diabetes Endocrinol 2023;11:384–6. doi:10.1016/S2213-8587(23)00118-

2 English M et al,. Breaking the silence on first referral hospitals and universal health coverage, Lancet Global Health Volume 12, Issue 3e366-e367March 2024.

3 Mazhar R et al,. First referral hospitals in low- and middle-income countries: the need for a renewed focus Health Policy and Planning, 39, 2024, 224–232 DOI: https://doi.org/10.1093/heapol/czad120.

4 Adler AJ et al,. Protocol for an evaluation of the initiation of an integrated longitudinal outpatient care model for severe chronic non- communicable diseases (PEN- Plus) at secondary care facilities (district hospitals) in 10 lower-income countries. BMJ Open 2024;14:e074182. doi:10.1136/ bmjopen-2023-074182.

5 WHO Step survey 2021-2025, Sierra Leone.

6 WHO Service Availability and Readiness Assessment (SARA) Sierra Leone – 2018.

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8 Moreiray J et al,. Long-Term Outcomes of a Cohort of Hypertensive Subjects in Rural Ecuador Glob Heart 2019 Dec;14(4):373-378. doi: 10.1016/j.gheart. 2019.09.001.

9 National Health Sector Strategic Plan 2020-2025, MOHS, Sierra Leone.

10 Tracking universal health coverage: 2023 global monitoring report WHO and World Bank, 2023.

11 Global health 2050: the path to halving premature death by mid-century, Lancet Commission, October 14, 2024. https://doi.org/10.1016/ S0140-6736(24)01439-9.