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and the Disease Priorities 3 Country Translation Project



The Revolving Drug Fund and Cost-sharing mechanisms to support the
Implementation of the Essential Health
Package in Liberia

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Acronyms

BPHS	Basic Package of Health Services
CHE	Current Health Expenditure
CMS	Central Medical Stores
DCP3	Disease Control Priorities 3
EPHS	Essential Package of Health Services
GDP	Gross Domestic Product
HDI	Human Development Index
HHFA	Harmonized Health facility Assessment
IMF	International Monetary Fund
LDHS	Liberia Demographic and Health Survey
LHEF	Liberia Health Equity Fund
LMHRA	Liberia Medicines and Health Products Regulatory Authority
MoH	Ministry of Health
NCDs	Non-Communicable Diseases
OOPs	Out of Pocket Payments
OPD	Out Patient Department
PAPD	Pro-Poor Agenda for Prosperity and Development
RDF	Revolving Drug Fund
SARA	Service Availability and Readiness Assessment
SDGs	Sustainable Development Goals
UHC	Universal Health Coverage
WHO	World Health Organization

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Executive Summary:

Liberia, a nation with a population of 5.2 million situated in West Africa, confronts a complex healthcare landscape characterized by post-conflict fragility, economic disparities, and persistent health challenges. Despite progress following the Ebola outbreak, maternal and neonatal mortality rates remain high, infectious diseases continue to burden the population, and socio-economic gaps persist. The government envisions achieving Universal Health Coverage (UHC) through a Primary Health Care approach, underpinned by decentralization, as outlined in the National Health Policy 2022-2031 and the National Health Sector Strategic Plan 2022-2026. However, the financing landscape of Liberia's health sector presents formidable challenges.

The healthcare financing environment in Liberia is characterized by significant resource gaps and challenges. Total public expenditure on healthcare has dwindled over the years due to declining donor contributions and limited government funding. The estimated budget for the National Health Strategic Plan 2022-2026 amounts to approximately US\$844 million, with the government's envisaged contribution falling significantly short of the required resources. The government's envisaged contribution of US\$288 million pales in comparison to the US\$555 million that must be strategically mobilized to bridge the resource gap over the plan's timeline. Total public expenditure has dropped significantly from \$80 per capita in 2016 to \$33 in 2021, largely driven by consistent falls in donor resources (donor health expenditure) for the same period from \$62 to \$16 per capita. Government of Liberia's support to health has stagnated between \$16 and \$18 per capital over the period 2015-2021. The scarcity of funds impacts the procurement of essential medicines and the delivery of quality healthcare services, particularly affecting vulnerable households. Household out-of-pocket payments (OOPs) constitute the largest share (53%) of healthcare financing, while external financing contributes 27%, and domestic government expenditure accounts for 16%. This shift in financing sources has led to accessibility and affordability challenges, particularly for vulnerable households. Catastrophic health expenditures affect 15% of households, with the highest incidence among the poorest. Non-prescribed medicines and medical supplies constitute the primary OOP drivers, contributing to 58% of expenditures. Consequently, only 37% of health facilities have access to even one essential tracer medicine, thereby eroding public confidence in the healthcare system and adversely affecting healthcare worker morale.

The government is exploring mechanisms to improve healthcare financing and access, including the reintroduction of the Revolving Drug Fund (RDF) at primary health facilities and the implementation of cost-sharing at secondary level facilities. To inform these efforts, a consultancy was conducted to assess the viability, impact, and affordability of these strategies

Objectives of the Consultancy: The primary objectives of this consultancy were as follows:

1. Analyze Liberia's health financing landscape in the public sector to identify resource gaps.
2. Assess the revenue potential, viability, and health systems impact of the RDF at primary health facilities and cost-sharing at secondary level facilities.
3. Determine affordable prices for medicines and services within the Essential Package for UHC.
4. Calculate the financial resources required from various sources to cover the costs of medicines and services at primary and secondary levels.

Methodology: The consultancy employed a mixed-methods approach, combining desk research, data analysis, stakeholder consultations, and expert interviews. Key stakeholders, including the Minister of Health, administrative units, and various divisions within the Ministry of Health, were interviewed to gather perspectives and insights. A site visit was conducted to two hospitals in Lofa county namely Kolahun Hospital and Tellewoyan Hospital as case studies of facilities that are piloting the RDF to gain further practical insights of implementation. A comprehensive literature review was conducted to gather relevant information on the RDF and cost-sharing strategies in Liberia and similar contexts.

Limitations: The assessment faced limitations such as data scarcity and reliance on secondary aggregated data. The formulation of models was based on averages, expert opinions, and assumptions. Time constraints also posed limitations, but efforts were made to adhere to international norms and standards to provide meaningful recommendations.

Key Findings

Challenges in implementing a centralized Revolving Drug Fund (RDF) Procurement Pipeline: A 16-month procurement pipeline for essential drugs poses significant challenges due to dependencies on various factors including fund availability, tendering process duration, logistics of drug distribution, geographical distance, and banking services for RDF sales.

Seed Capital Requirement for centralized RDF Establishment: The estimated seed capital requirement for RDF establishment is US\$25,993,491.50. This amount is about 15-fold the annual government expenditure on essential medicines. Effective donor engagement is necessary to bridge the funding gap and support RDF's implementation.

RDF Revenue Potential: The RDF's revenue potential depends on patient volume, types of medicines, pricing strategies and level of exemptions. Taking into consideration key groups such as indigent, those aged above 65 years, those aged 5 years and below, pregnant women and public health programs such as HIV and TB, it was estimated that 69% of the population would be eligible for exemption from RDF sales, with 65% of those as being classified as indigent. At this level of exemption, it was found to be unaffordable to recover the funds for drugs given to these exempted populations through charging the remaining targeted population. The report proposes a cash only sale approach to targeted population at a uniform price of US\$1.78 per item dispensed. This model is estimated to raise on average US\$7.2 million per annum from Sales

Based on the Kolahun model, a Decentralized Model is recommended which will be run by local RDF committees comprised of community leaders and facility administration. The seed capital requirements were also examined which would run on a 2 monthly pipeline with local purchases made by the local RDF committee from the sales revenue. This approach would run on a prepayment model with each Household required to make a monthly contribution of US\$2.85.

Optimal Prices for Medicines: Medicines for the RDF should be sourced from non-profit suppliers abroad or local sources. For the Centralized Model, a national Uniform fee per item dispensed (US\$1.78) is proposed for easy accounting of sales. Cross-subsidies from the cheaper to more expensive drugs help balance costs and affordability for clients. In the decentralized model a markup of 60% is recommended from wholesale price on each drug item to be sold for the model to be sustainable and must be constantly monitored by the RDF committee. The bank account signatories must include members of the community

and when drugs are received members of the community must verify quantities received against quantities ordered.

Cost-sharing at Secondary Level Facilities:

- Revenue potential from cost-sharing depends on services subject to cost-sharing, patient willingness to pay, and socio-economic context.
- The cost per Beneficiary for each OPD visit without drugs is estimated to be US\$ 4.57 at primary health care level, US\$6.41 at Secondary Level and US\$ 6.72 at Tertiary Level. In scenario 1, the cost sharing price per OPD visit is US\$ 1.28 at Secondary and US\$ 1.34 at Tertiary Level with Cost recovery rate of 6%. In Scenario 2, the cost-sharing price per OPD visit is US\$ 1.92 at Secondary and US\$2.02 at Tertiary Level with cost recovery rate of 9%. Scenario3, shows a cost-sharing price per OPD visit of US\$ 2.56 at Secondary and US\$ 2.69 at Tertiary level with recovery rate of 12%. Taking into consideration the threshold of US\$7 for affordability, all three scenarios look plausible and affordable. However, a more nuanced consideration that factors in the cost of medicines at the selling price of US\$1.78 per item, with an average dispensation of three items per visit, yields a more intricate analysis.
- The Unit cost per beneficiary for each Inpatient admission without drugs was estimated to be US\$ 39.18 at Secondary level and US\$ 48.51 at Tertiary Level. In Scenario 1, the cost sharing price per admission is estimated to be US\$ 7.84 at Secondary level and US\$ 9.70 at tertiary level with cost recovery rate of 6%. Scenario 2, the cost sharing price per admission is estimated to be US\$ 11.75 at Secondary level and US\$ 14.55 for Tertiary Level. While in Scenario 3, the cost-sharing Price is estimated to be US\$ 15.67 for Secondary and US\$ 19.40 at tertiary level. In trying to strike a balance between affordability and cost-recovery, only scenario one presents a feasible option when juxtaposed against the affordability threshold of US\$7. Within this dimension, only Scenario 1 emerges as an economically feasible and affordable model.

2. Resource Requirements for Essential Medicines:

- An examination of the fiscal landscape reveals a concerning trend in government allocations towards the procurement of essential medicines. Presently, government apportions a modest US\$3.8 million, which equates to a mere 9% of the estimated annual requirement of US\$41.2 million. This glaring discrepancy underscores the limited fiscal space and poses substantial challenges in realizing comprehensive and effective healthcare provisioning. The proposed Revolving Drug Fund (RDF) offers a notable avenue for augmenting available resources. With an estimated annual revenue of US\$7.2 million, the RDF holds the potential to contribute significantly to the financial requirements for essential medicines provision. However, it is essential to temper this potential with realism. While substantial, this revenue stream would constitute only 17% of the estimated requisite resources per annum, exposing the substantial resource gap that looms large. The pronounced resource gap of US\$30.2 million per annum presents a stark reality, necessitating external support to bridge this glaring deficit.

- Donor engagement is crucial to meet the significant resource gap and achieve Universal Health Coverage (UHC).
3. *Resource Requirements for Services (Without Drugs):*
- The analysis presented above underscores critical inadequacies in the prevailing funding landscape for healthcare provision. Specifically, the FY 2023 government allocation to counties, totaling US\$6,953,343, emerges as starkly insufficient in the context of delivering quality services. Notably, this allocation accounts for a mere 18% of the estimated requirement of US\$28.4 million necessary for robust service delivery. Moreover, the potential revenue generation stemming from the proposed cost-sharing model necessitates careful consideration of the population's ability to pay. The cost-sharing model for Scenario 1 is predicted to raise a relatively modest US\$0.93 million, equivalent to a mere 3% of the requisite resources. Once again, this underscores the imperative of substantial donor intervention.

Health System Impact

Drawing insights from empirical studies, the summary of the health system impact is outlined below;

1. *Enhanced Drug Availability and Accessibility:* The RDF model, exemplified by the case study at Kolahun hospital and internationally in Sudan's experience, significantly improves medicine availability, potentially alleviating shortages and ensuring timely treatment.
2. *Positive Health Systems Impact:* RDFs and cost-sharing mechanisms can positively influence healthcare systems by improving access to affordable medications, leading to better disease management and patient outcomes.
3. *Affordability and Healthcare Delivery:* Accessible medications through RDFs can enhance healthcare delivery, aligning with the goals of Universal Health Coverage and making quality services more accessible.
4. *Financial Barriers and Viability:* Effective management, transparent practices, and community involvement are critical for the viability of RDFs. Sudan's approach and exemption mechanisms underscore the importance of these factors.
5. *Equity and Exemptions:* Well-structured exemption frameworks, as seen in Ghana, are essential to ensure equitable access to cost-sharing mechanisms and healthcare services. Donors would be willing to contribute to a rebranded RDF as 'Drug Basket fund' with protected funds for vulnerable members of the community. Drugs bought by donors would not be sold to members of the public.
6. *Balancing Access and Cost Sharing:* Balancing cost-sharing mechanisms is crucial to avoid patient non-compliance. Transitioning from user charges to prepayment models, such as taxation and insurance, can promote equity and improved health outcomes.
7. *Prepayment Model for RDF:* The prepayment RDF model, considering household capacities, offers a feasible approach to financing healthcare, aligning with existing expenditure patterns and promoting affordability.

Recommendations

These recommendations reflect an integrated approach that addresses governance, operational procedures, financial management, regulatory reforms, health literacy, and advocacy strategies required for successful implementation of RDF and cost-sharing mechanisms.

1. *Strong Governance and Leadership:* Effective implementation of RDF and cost-sharing initiatives necessitates robust governance structures at various levels. Multidisciplinary committees should be established within the Ministry of Health (MoH), counties, and health facilities to ensure the holistic success of these interventions. These committees must include members of the community and would guide policy direction, regulatory oversight, operational guidelines, and financial management, fostering transparency and community engagement.

2. *Pharmaceutical Inclusion Criteria:* Committees must ensure that only pharmaceuticals meeting high standards of efficacy, safety, and trustworthiness are integrated into the RDF. The Liberia Medicines and Health Products Regulatory Authority (LMHRA) will play a pivotal role in this process, ensuring regulatory oversight and the maintenance of a reliable drug supply. Working with the MoH wholesalers must be identified that can supply drugs under RDF and using lessons from the World Bank performance Based framework contracts including price of drugs with private wholesale vendors.

3. *Operational Guidelines and Training Materials:* The establishment of comprehensive operational guidelines and training materials is vital to ensure consistent and efficient operations of RDF and cost-sharing mechanisms. Harmonization of operational procedures across levels and regions will promote transparency, improve compliance, and enhance the impact of these interventions. This will require a revision of the draft RDF guidelines and development of Cost-sharing guidelines.

4. *Substantial Investment:* A substantial seed investment of US\$26 million is required for the successful initiation of the RDF at a national level. Strategic engagement with key stakeholders, including the Ministry of Finance and potential donors, is crucial to secure the necessary funding. This investment lays the foundation for a self-sustaining RDF that improves drug availability, affordability, and overall healthcare delivery. An alternative decentralization model would require households and GoL to contribute to the seed fund at an estimated US\$2.85 per household.

5. *Regulatory Reform:* A robust regulatory framework is essential to ensure transparent and equitable pricing of medicines in both the public and private sectors. Empowering the LMHRA with legal authority to establish reference pricing, mark-up regulations, and reimbursement price policies will safeguard the RDF against potential pricing disparities that could threaten its sustainability.

6. *Financial Management and Accountability:* Implementing effective financial management systems, including monthly audit mechanisms and tracking systems, is imperative to prevent corruption and promote responsible fund utilization. Lessons from other countries and the local case studies in Lofa county underscore the importance of vigilance, transparency, and accountability in financial operations.

7. *Health Literacy and Stakeholder Support:* Health education programs should be developed to increase awareness and understanding of RDF and cost-sharing among the population. The support and buy-in of various stakeholders, including government, healthcare providers, pharmaceutical companies, and community representatives, are pivotal to the successful reintroduction of these mechanisms.

8. *Advocacy Plan:* Building trust and confidence among stakeholders is essential for the success of RDF and cost-sharing initiatives. An advocacy plan that focuses on essential medicines delivery, technical data transparency, resource mobilization, and establishing a billing and complaints mechanism is

recommended. Collaborative efforts between the Ministry of Health and communication specialists will be instrumental in executing this plan effectively.

Key Steps:

1. **Government Endorsement and Policy Framework:** Secure government endorsement and develop a robust policy framework to provide the legal and regulatory basis for the cost-sharing and RDF program. Revise and develop clear guidelines for RDF and cost-sharing program.
2. **Formulating Co-Payment Strategies and Policy Documentation:** Engage stakeholders to determine co-payment strategies for the complementary UHC package, prioritizing service access and financial risk reduction.
3. **Package Design with UHC Principles:** Distribute the policy and a copy of the core and the complementary package to national and sub-national levels in line with UHC principles, ensuring high-impact interventions at the primary healthcare level.
4. **Cost Estimation:** Conduct detailed ingredients-based costing of 128 prioritized services to estimate program costs per capita within the agreed fiscal space range.
5. **Community Engagement and Transparency:** Engage communities transparently, highlighting program benefits and aligning them with UHC principles to gain crucial community support.
6. **Legislation and Regulations:** Draft and enact necessary legislation and regulations to formalize the cost-sharing program and the Liberia Health Equity Fund (LHEF).
7. **Implementation Framework:** Develop a comprehensive framework outlining roles, financial procedures, reporting mechanisms, and accountability measures.
8. **Monitoring and Evaluation:** Establish a robust system for ongoing monitoring and evaluation to ensure program progress, effectiveness, and adaptability.
9. **Capacity Building:** Invest in capacity building for stakeholders, equipping them with the skills to manage cost-sharing transparently and effectively.

Introduction

Country Context

Liberia is a country situated in West Africa, sharing borders with Sierra Leone to the west, Guinea to the north, and Cote D'Ivoire to the east. Covering an area of 111,369 square kilometers and home to around 5.2 million people, Liberia is classified as a low-income, post-conflict fragile nation, with an estimated Gross Domestic Product (GDP) per capita of USD 673.1 in 2021.(1, 2) Geographically, Liberia is divided into five regions and 15 counties, with population sizes varying from 74,317 in Grand Kru County to 1,434,974 in Montserrado County. However, despite its geographical diversity, Liberia's demographics reveal a youthful population, with an approximate median age of 18 years, offering potential for economic growth if investments in education, skill development, and job creation are adequately made.(1, 3)

The Liberian health system has faced sustained challenges related to two civil wars in the late 1980s and an Ebola virus disease outbreak in 2014–2015. These events left Liberia with a fractured health system, a low density of health workers, and inequities in access for basic services across the country.(4) In terms of human development, Liberia faces significant challenges, ranking 175th out of 189 countries on the Human Development Index (HDI) in 2019, reflecting its low human development status. The HDI, which considers factors like life expectancy, educational attainment, and per capita income, stood at 0.496 in 2019.(5) Moreover, almost half of Liberia's population, around 44.4%, lives below the international poverty line of US\$ 1.9 per day, necessitating targeted policies to improve living standards and overall well-being.(1) Health and education indicators also warrant attention. While Liberia has made progress in increasing life expectancy at birth, from 51.7 years in 2000 to 64.1 years in 2019, the country still faces disparities in education, particularly among women and girls. Roughly 31% of women aged 15-49 have no education compared to 13% of men, and 41% of girls have not received any education compared to 29.6% of boys. Addressing these disparities is vital for promoting gender equality and empowering women.(4, 5)

Economically, Liberia has shown positive momentum since the end of the civil war in 2003, with an average GDP growth rate of around 3.1% from 2010 to 2019. However, the economy remains heavily reliant on extractive industries such as rubber, iron ore, and timber, which poses challenges in achieving economic diversification. In 2019, mineral fuels and products accounted for approximately 42.6% of the country's total exports, making Liberia vulnerable to global market fluctuations and impacting fiscal stability.(6, 7)

Universal Health Coverage and Policy Direction

According to the World Health Organization (WHO), Universal Health Coverage (UHC) can be defined as ensuring that all people receive the health services they need of sufficiently high quality and without having to fear financial hardship.(8) The increasing recognition of the importance of UHC is reflected in the central role it has been ascribed within the 2030 Agenda for Sustainable Development . The delivery of these services requires health and care workers with optimal skills mix at all levels of the health system, who are equitably distributed, adequately supported with access to quality assured products, and enjoying decent work. Protecting people from the financial consequences of paying for

health services out of their own pockets reduces the risk that people will be pushed into poverty because unexpected illness requires them to use up their life savings, sell assets, or borrow – destroying their futures and often those of their children. Achieving UHC is one of the targets the nations of the world set when they adopted the 2030 Sustainable Development Goals (SDGs) in 2015. At the United Nations General Assembly High Level Meeting on UHC in 2019, countries reaffirmed that health is a precondition for and an outcome and indicator of the social, economic and environmental dimensions of sustainable development.(8)

By adopting this UHC agenda in the National Health Policy 2022-2031 and the National Health Sector Strategic Plan 2022- 2026, the Ministry of Health in Liberia hopes to move the nation towards their vision to have *a healthy population, with particular protections for the poor and vulnerable, for the attainment of equitable growth and for sustainable development*, in line with the Pro-Poor Agenda for Prosperity and Development (PAPD).(4, 5) The Policy direction has prioritized a Primary Health Care approach that is heavily driven by decentralization. Against this backdrop, the Ministry of Health (MoH) is currently revising its service delivery packages (Basic Package of Health Services (BPHS) and EPHS), with a view to improving access to quality essential health services, medicines, and vaccines. The Essential Package of Health services (EPHSII) identifies a minimum standard package of preventive and curative services to be provided at all levels of the health system. The revised and costed Essential package of Health services (EPHSII) shall prioritize services that reflect the disease burden and health conditions affecting the country and will be implemented incrementally based on the available fiscal space.(5, 9) As Part of this process, The Disease Control Priorities 3 (DCP3) Country Translation project has collaborated with the Liberia Ministry of Health (MoH) to provide technical assistance in updating the national EPHS and to build capacity in priority setting and decision making on resource allocation for package implementation. The revised Universal Health Coverage Essential Package of health services covers 78 core interventions provided free at point of service use, and 50 complementary interventions financed through the MoH cost-sharing programme. The core and complementary sub-packages are estimated to cost the government US\$12.28 per capita, which is well within the fiscal space range agreed for government financing of the package of US\$12-14. Partner funding is estimated to cost US\$ 10.37 per capita while the Cost-sharing component will cost US\$ 5.35 per capita, approximately 19% of the estimated Total cost per capita of US\$ 28 to implement the Essential package of Health services. An estimated 1.2 million DALYs will be averted by implementing the interventions in this package. (10)

The healthcare indicators in Liberia reflect the urgency of this endeavor. Despite progress in reducing maternal mortality and malaria prevalence, the burden of these diseases remains significant. Health service utilization falls short of the targeted levels set in the National Health Policy and Plan, underscoring the need for enhanced healthcare access. Additionally, a scarcity of skilled health workers and a rise in out-of-pocket payments for healthcare add to the complexities of the healthcare financing landscape.

Health Status

Liberia has made commendable strides in its healthcare system following the Ebola epidemic in 2014-2016. The country implemented robust measures to strengthen its health system, enhancing surveillance and response capacities to combat infectious diseases. Nevertheless, challenges persist, particularly in maternal and child health, infectious diseases, and non-communicable diseases (NCDs).

Maternal and Child Health: Despite progress in maternal healthcare, Liberia continues to rank among countries with the highest maternal mortality ratio globally, reaching 742 deaths per 100,000 live births in 2019-2020. Notably, there was a 30% reduction from 1,072 deaths per 100,000 live births reported in the 2013 Liberia Demographic and Health Survey (LDHS), indicative of strides made in reproductive healthcare services.(11) However, neonatal mortality rates have reported an alarming increase from 26 deaths per 1,000 live births in 2013 to 37 deaths per 1,000 live births in 2019-2020. Similarly, the infant mortality rate rose from 54 to 63 per 1,000 live births during the same period, highlighting the urgency to achieve the Sustainable Development Goal (SDG) target of reducing child mortality to less than 25 per 1,000 live births. Moreover, stunting prevalence among children aged under-five stands at 30%, with 10% classified as severely stunted, surpassing the World Health Organization's threshold of $\geq 30\%$. These rates exhibit spatial distribution across the county, with the South-Central region displaying lower prevalence (25%) compared to other regions (33-34%). Additionally, there are significant urban-rural disparities, with River Cess reporting the highest prevalence (41%) and Montserrado the lowest (21%).(11-13)

Infectious Diseases: Infectious diseases continue to pose a substantial burden on Liberia's health system. Malaria remains endemic, with 14.7% of children under five years old testing positive for the disease. This disease accounts for a considerable proportion of diseases of public health concern, representing 34% and 48% of all outpatient and inpatient cases, respectively. The national prevalence of malaria stands at 45% based on Malaria Rapid Diagnostic Tests (mRDT).(5, 12, 14) In addition to malaria, tuberculosis and HIV/AIDS are significant health concerns, necessitating sustained efforts in prevention, diagnosis, and treatment. Approximately 35,000 individuals are living with HIV in Liberia, with a national prevalence of 2.1%. The HIV epidemic exhibits a dual dynamic, being both generalized in the wider population at a low level and concentrated among key populations. Moreover, the TB incidence rate was estimated at 314 cases per 100,000 population in 2020, resulting in 16,000 infections with notified TB cases (all cases, all forms) totaling 6,990 individuals. Of note, 59.4% of these cases were men, and 16% were children.(5, 12, 15)

Non-Communicable Diseases and Injuries: Non-communicable diseases (NCDs) and injuries constitute a significant share of Liberia's overall burden of disease, accounting for an estimated 37.9% of the national burden from all causes and 43.4% of all deaths in 2016. Contrary to the misconception that NCDs predominantly affect older populations, over half (51.5%) of the NCD burden and 69.8% of injuries occur before the age of 40, underscoring the need for early preventive and management strategies.(5)

Health System Capacity: The health system is besieged by supply side constraints with regards to access to appropriate and adequate infrastructure, Skilled Health workers and essential medicines which leads to low effective coverage of priority cost-effective interventions required to reach Universal health Coverage. The 2021/2022 Liberia Harmonized Health Facility Assessment (HHFA) was conducted to ascertain the availability, readiness and quality of health service delivery to better understand existing gaps/improvement and identify sustainable approaches for improving health care delivery services. Overall, a service availability index was calculated as an unweighted average of the three surveyed core areas: infrastructure, health workforce, and utilization and is presented as a

percentage score. On average, the general service availability index for Liberia is 58% which was below the targeted range of 75% to 100% as progress towards targets. (3)

Table 1: Selected Indicators from the 2022 HHFA

Indicator	Percent Availability	General Service Availability
General Service Availability Index (100% target)	58%	On average the general service availability index is 58%
Inpatient beds (25 inpatient beds per 10 000 pop)	63%	15.9 inpatient beds per 10,000 population compared to 16.4 in 2018
Health workforce density (44.5 health workers per 10 000 pop)	48%	12 core health workers per 10,000 population compared to 10.7 in 2018
Outpatient utilization (5 outpatient visits per person per year)	17%	0.8 outpatient visits per person per year compared to 1.12 in 2018
Inpatient utilization (10 hospital discharges per 100 pop per year)	67%	6.7 hospitals discharges per 100 population per year compared to 6.3 in 2018
MNCH Service Availability	14%	CEmONC available in 14% of facilities compared to 4% in 2018
	77%	BEmONC available in 77% of health facilities compared to 61% in 2018

Human Resources for Health: Liberia continues to confront a pressing issue of inadequate skilled healthcare professionals, especially in rural areas. The availability of skilled health workers, including MDs, PAs, RNs, CMs, and RMs, remains alarmingly limited, with only 12 skilled health workers per 10,000 population. This figure falls far below the World Health Organization's (WHO) recommended standard of 44.5 skilled health workers (MDs, RNs, CMs, PAs) per 10,000 population, necessary for achieving Universal Health Coverage (UHC). Notably, the current number of skilled health workers accounts for just a quarter of what is required, putting a considerable strain on the health budget. (16, 17). The concerning situation is exacerbated by the fact that 80% of the government's health allocations are allocated to the wage bill, leaving only a meager portion for funding service delivery. Consequently, this allocation imbalance severely hampers the ability to hire new healthcare professionals and adequately finance essential inputs like medicines, diagnostics, and equipment. (18)

Medical Infrastructure and Service Utilization: Liberia's health service delivery system operates across three tiers, as defined in the Essential Package of Health Services (EPHS) 2011: Tertiary level (referral hospitals), Secondary level (county hospitals and health centers), and Primary level (clinics & Community Health Services). (5, 19) As of 2021, there were a total of 866 health facilities reporting to the Liberia DHIS2 across all 15 counties. Public health facilities constitute the majority, accounting for 55%, while private facilities comprise the remaining 45%. A smaller proportion of these facilities function as Hospitals (4.2%) and Health Centers (7%), with the majority (88%) serving as clinics. (3)

Despite ongoing efforts to improve medical infrastructure, many healthcare facilities in Liberia face significant deficiencies in basic equipment and resources required to deliver essential services effectively. The number of outpatient visits per person per year in Liberia is dishearteningly low, averaging less than 0.8 visits per person annually, compared to the 2018 Service Availability and Readiness Assessment (SARA) target of 1 visit per person per year. This represents only 17% of the

recommended target of 5 visits per person per year. Moreover, nationally, there are only 6.7 hospital discharges per 100 population per year, indicating that Liberia is at 67% of the WHO's recommended target of 10 hospital discharges per 100 population per year.(3, 20)

Table 2: Health facility distribution by type and County

County	Clinic		Health Centers		Hospitals		Grand Total
	Private	Public	Private	Public	Private	Public	
Bomi	3	23				1	27
Bong	14	38		1	1	2	56
Gbarpolu	1	14				1	16
Grand Bassa	6	25	1		2	1	35
Grand Cape Mount	1	28	1	3		1	34
Grand Gedeh	2	19		2		1	24
Grand Kru	2	15		4		1	22
Lofa	5	50		3	2	2	62
Margibi	22	20	8	6	1	1	58
Maryland	3	21		2		1	27
Montserrado	266	44	10	12	4	6	342
Nimba	29	46	1	4	3	3	86
River Cess	2	16		1		1	20
River Gee	2	15		2		1	20
Sinoe	2	34				1	37
Grand Total	360	408	21	40	13	24	866

The health facility density ratio in Liberia stands at 1.9 per 10,000 people, as depicted in Figure 1. At first glance, this figure is encouraging, as it falls just below the WHO threshold of 2 health facilities per 10,000 population, suggesting that Liberia is 95% on track to achieve the recommended target for health facility density. However, a closer examination of the disaggregated data by County reveals a stark reality of inter-county disparities. The health facility density varies significantly, ranging from 1.2 facilities per 10,000 people in Grand Bassa County to 3.0 facilities per 10,000 people in Grand Kru County. This variability highlights uneven distribution of health facilities based on population across the counties, indicating the presence of healthcare deserts in certain regions and a pressing need for additional investments in health infrastructure. Alarmingly, nearly half (7 counties) of the counties exhibit a health facility density ratio of less than 2 per 10,000 people, falling below the WHO recommended threshold. This situation underscores the critical importance of addressing the imbalanced distribution of health facilities to ensure equitable access to healthcare services for all citizens. While Liberia's overall health facility density ratio appears promising, the reality of inter-county disparities paints a more complex picture. The uneven distribution of health facilities across

the counties highlights the necessity for targeted investments in health infrastructure to bridge the gaps and ensure equitable access to healthcare for all populations in Liberia.(3, 20)

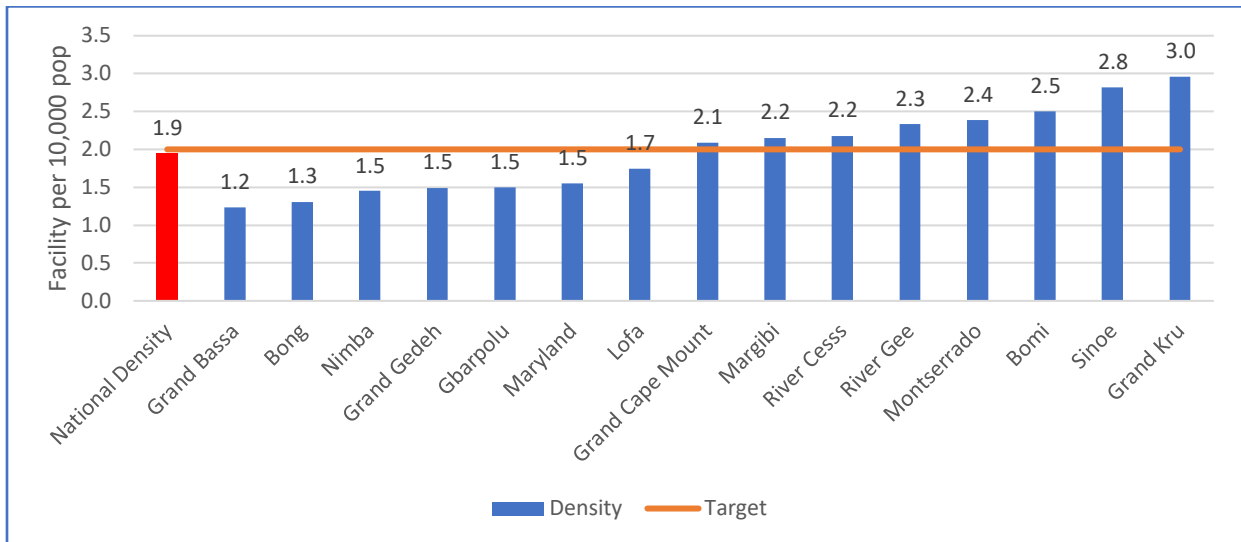
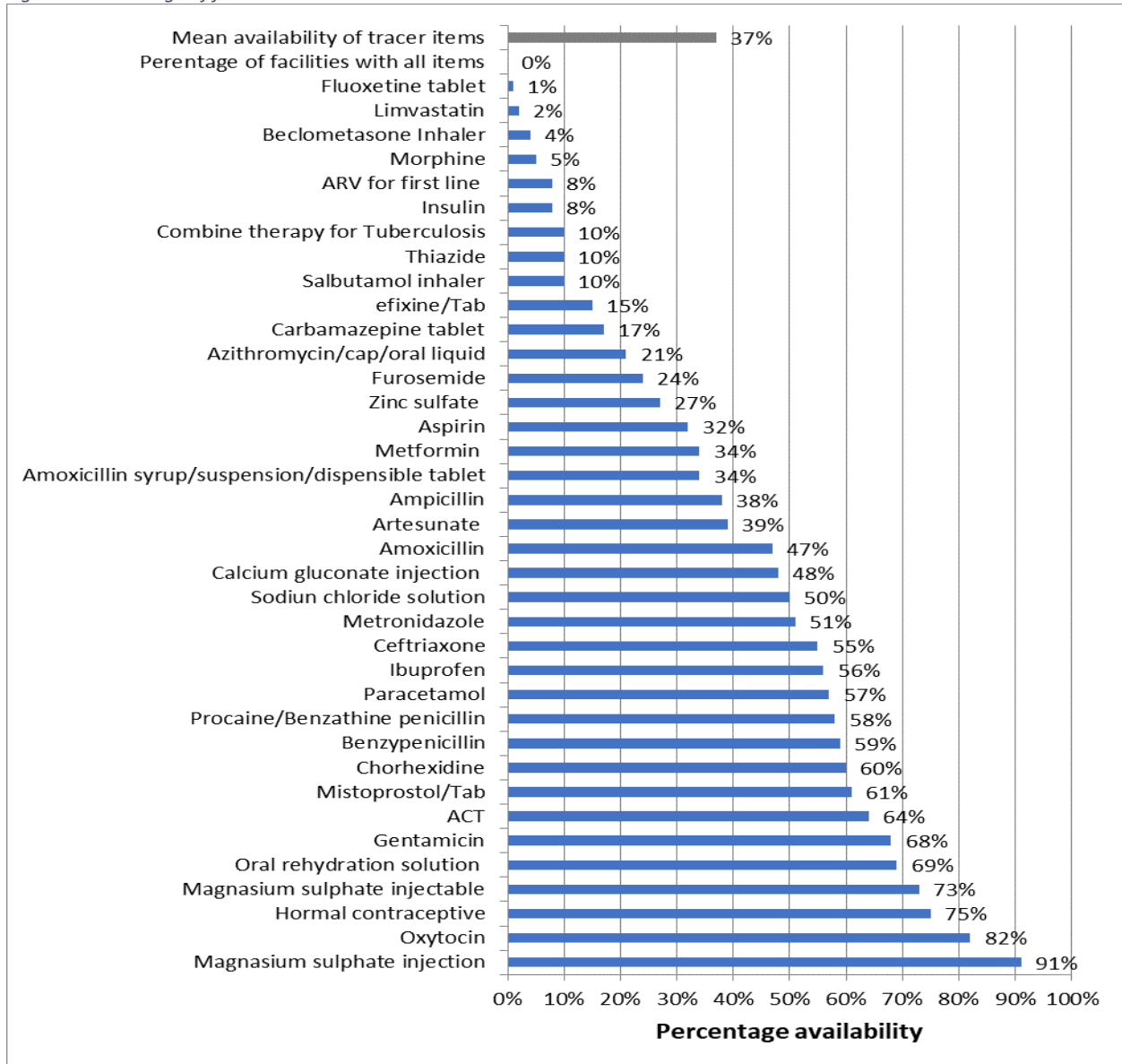


Figure 1: Liberia Health Facility Density per 10,000 population by County

Limited Access to Essential Medications: Ensuring access to essential medications remains a significant challenge in Liberia's healthcare system. The survey considered 24 tracer items enshrined in the National Essential Drugs and Medicine List as list in Figure 2 below.

Figure 2: Percentage of facilities with Essential Medicines Available



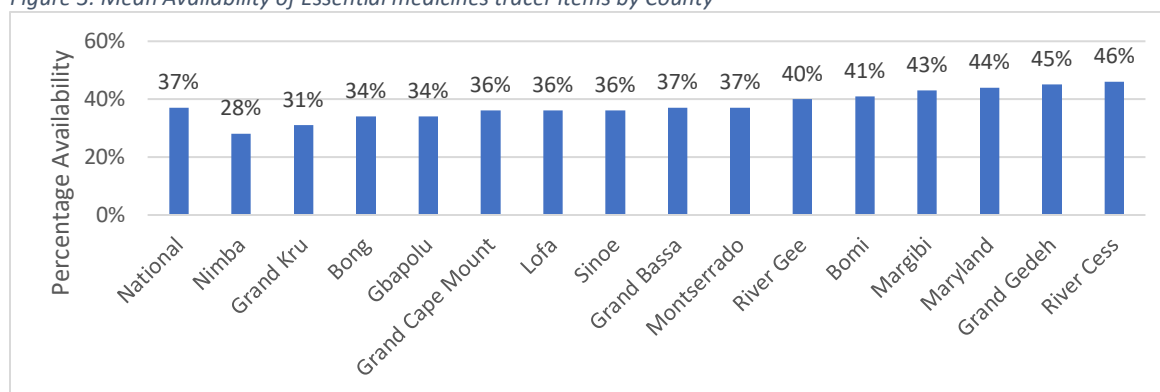
The survey findings are concerning, as not a single healthcare facility had all the tracer items available, indicating a critical deficit in the availability of essential medications. On average, the mean availability of tracer items across the facilities was a mere 37%, underscoring the severity of the issue. The survey results further revealed disparities in the availability of essential medicines for different health conditions. Higher essential medicines scores were observed for managing labour, oral rehydration solutions, treating infections, and providing food supplements. In contrast, essential medicines for managing chronic conditions like diabetes, hypertension, heart diseases, and cholesterol were found to be less accessible. This discrepancy is particularly alarming, given that diabetic and hypertensive patients often require protracted treatment periods with continuous medication, making access to essential medicines vital for treatment success and, ultimately, survival.(3)

In the public sector, drugs are generally provided to patients free of charge. However, due to the inadequate availability of essential medicines in public facilities, patients frequently have to purchase them out of their own pockets in the private sector. The private sector often has higher availability levels of essential medications, offering an alternative source for patients. However, this situation

exposes patients to out-of-pocket expenses, placing a financial burden on individuals seeking necessary treatment.

The lack of access to essential medications in Liberia's healthcare facilities poses a significant barrier to effective treatment and care for patients. Addressing this issue requires focused efforts to improve the availability and accessibility of essential medications across the healthcare system, ensuring that all patients have equitable access to the treatments they need for their well-being and health outcomes.

Figure 3: Mean Availability of Essential medicines tracer items by County

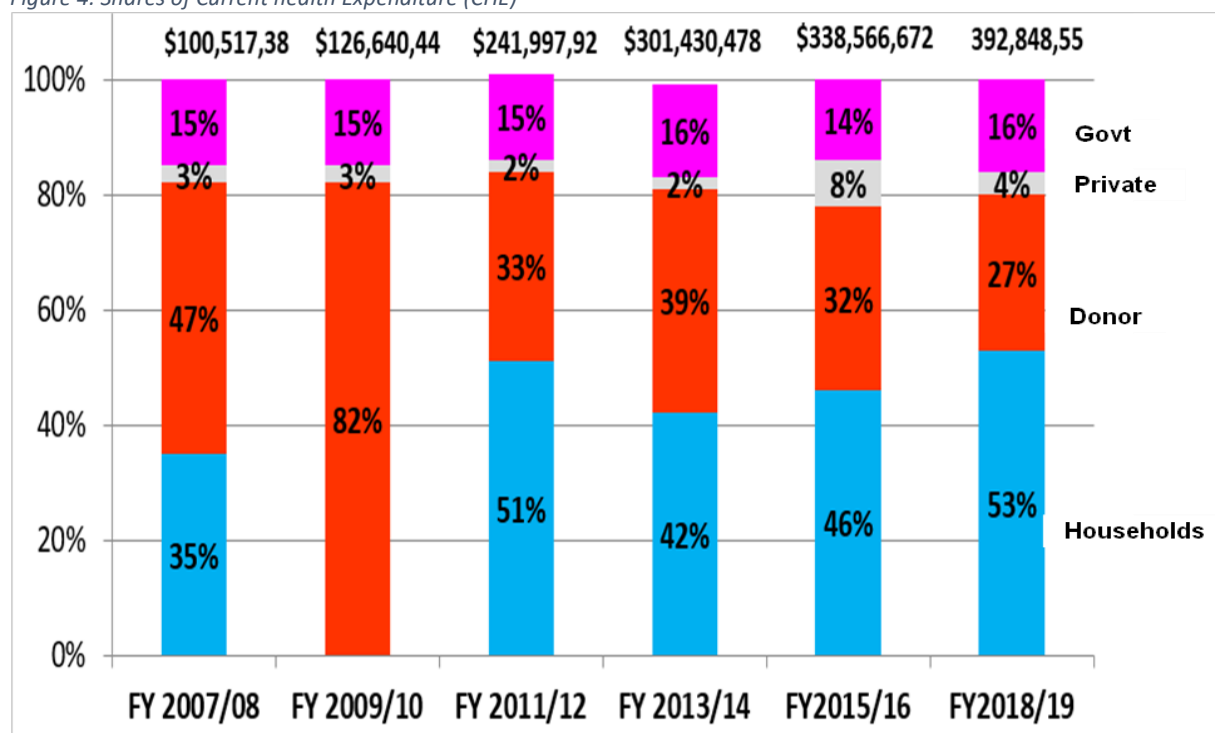


Financing Landscape

Macroeconomic environment: The overall fiscal position of government remains constrained and this poses a challenge to increase fiscal space to increase domestic resources for the health sector. The nation's GDP grew at an average rate of 3.1% from 2010 to 2021 with a heavy reliance on extractive industries such as rubber, iron ore, gold and timber which accounts for 42.6% of the country's total exports. The fiscal envelope deficit (% government spending to GDP ratio) is estimated to have risen to 6.9% of GDP in 2022, up from 2.4% in 2021. This was due to a decline in grants, lower-than-expected royalties from iron ore exports and , expenditure overruns on goods and services, transfers, and subsidies. With a debt-to-GDP ratio of 55.4 Liberia is assessed to be at moderate risk of external debt distress and high risk of overall debt distress. The scope of increasing government revenue also remains constrained as the government revenue (tax as % of GDP) at 12.4% is among the lowest in Sub-Saharan Africa which averages at 18.56%.(6, 7, 21)

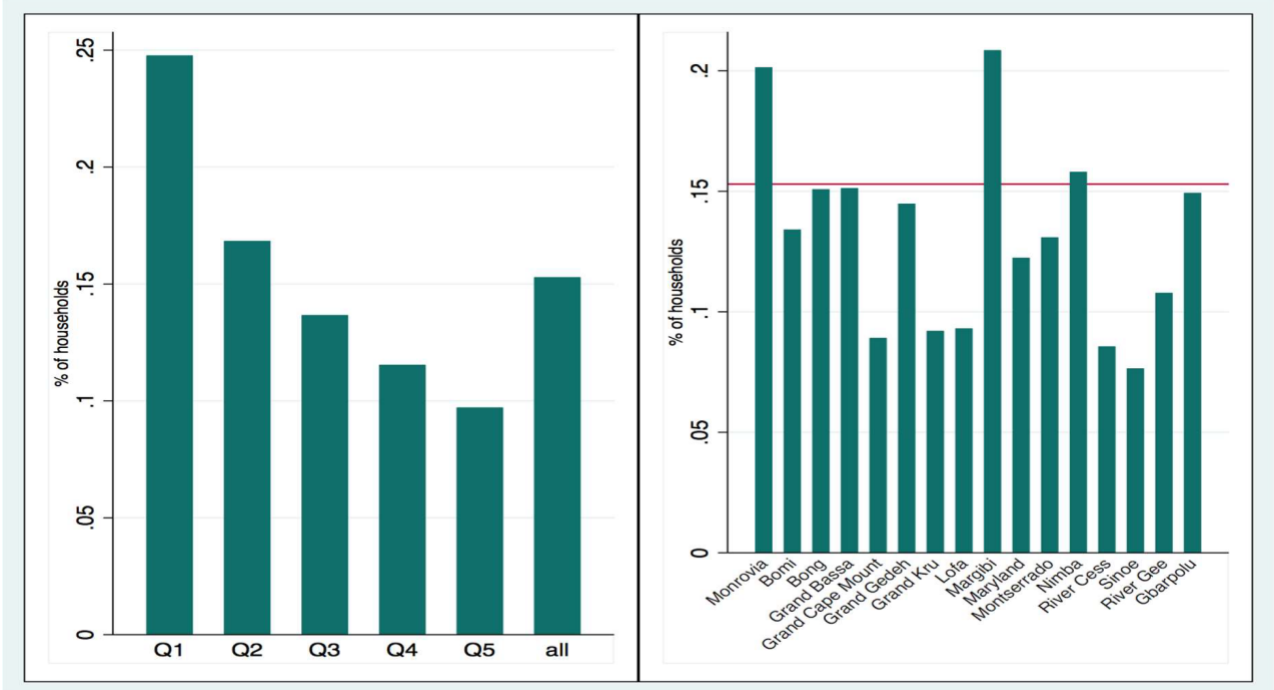
The financing landscape in Liberia's healthcare sector has undergone significant changes over the years. Currently, household out-of-pocket payments (OOPs) constitute the largest source of healthcare financing, accounting for approximately 53% of the country's total health expenditure (CHE). External financing follows as the second most significant source, contributing around 27%, while domestic government health expenditure lags behind at 16%.(22)

Figure 4: Shares of Current health Expenditure (CHE)



Notably, the share of donor support as part of the total CHE declined from 47% in 2017 to 27% in 2019. Concurrently, household OOPs' share of the CHE rose from 35% to 53%, while government financing remained stagnant at around 15%. This shift in financing sources has implications for healthcare affordability and access, particularly for vulnerable households.(22) During this period, 15% of all households experienced catastrophic health expenditure, with 3.5% being pushed below the international poverty line of US\$1.90 PPP due to their healthcare spending. While 15% of all the households in Liberia experience catastrophic health expenditures, the highest incidence is among the poorest households (25%) as compared to the rich households (10%). The percentage of households with catastrophic health expenditures decreases from poor to rich households. This shows that out-of-pocket expenditures on health in Liberia are regressive. Across the counties, Margibi has the highest incidence of catastrophic health expenditures at 21% of households, followed by Monrovia at 20% of households. Counties with the lowest rate of catastrophic expenditures are Sinoe and River Cess at 8% and 9% of households, respectively.(18, 22)

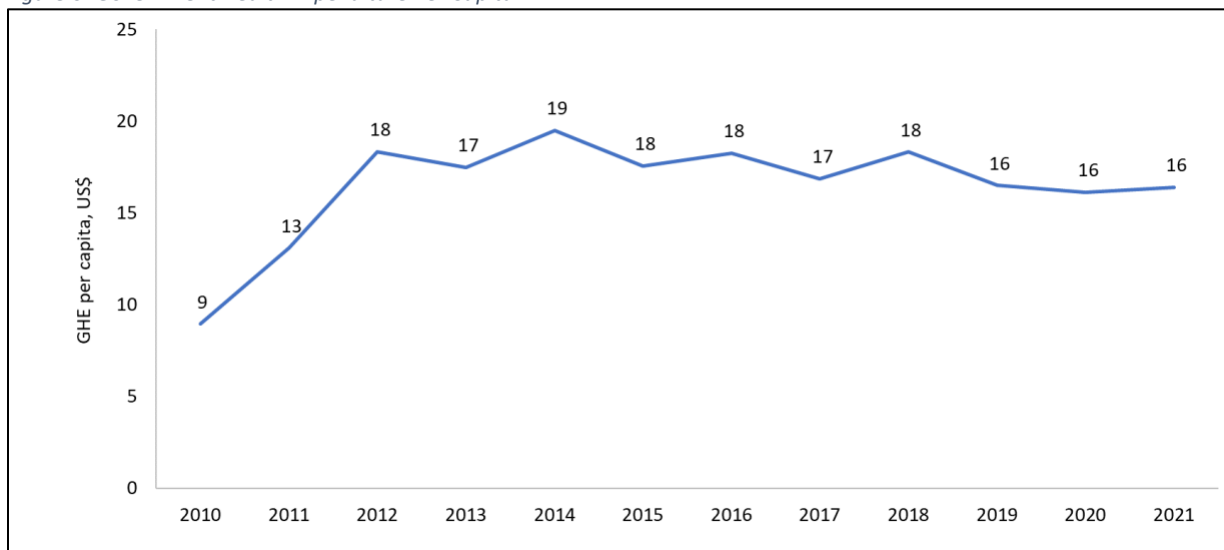
Figure 5: Catastrophic Health Expenditure by Quintiles and Counties



The main drivers of OOP spending in Liberia are non-prescribed medicines and medical supplies, accounting for approximately 58% of OOPs for all households. Total outpatient care, including consultations, prescribed medicines, and exams, follows closely as the second leading driver, comprising 35% of OOPs for all households. However, among households facing catastrophic spending, total outpatient care becomes the primary driver, constituting approximately 70% of OOPs for all households. At the household level, total annual OOP expenditure on health is US\$121. Of this, US\$ 84 is spent on outpatient care (consultations, exam fees, prescribed medicines), US\$6 is spent on inpatient care, US\$ 29 on non-prescribed medicines and supplies, and US\$ 2 on overnight stays at traditional healer.(18, 22)

Considering the health financing environment, total public expenditure has dropped significantly from \$80 per capita in 2016 to \$33 in 2021, largely driven by consistent falls in donor resources (donor health expenditure) for the same period from \$62 to \$16 per capita. Government of Liberia’s support to health has stagnated between \$16 and \$18 per capital over the period 2015-2021. The scarcity of financial resources has significantly affected the government's ability to allocate sufficient funds to the health sector. Government support to health stagnated between \$16 and \$18 per capita from 2015 to 2021 (Figure 6), reflecting the economic constraints and competing national priorities. The percentage of the government budget allocated to health has increased steadily from 9% in 2010 to 14% in 2021 and has plateaued since then. Public funding for health must increase to enable OOP expenditure to decrease and for UHC to be achieved.(10, 22)

Figure 6: Government Health Expenditure Per Capita



Looking into the future, the International Monetary Fund (IMF) projects an increase in the per capita government health budget from the current level of US\$16 to US\$21 in 2026. However, donor funding is expected to decrease significantly, dropping from US\$21 in 2020 to US\$5 in 2026. Consequently, the total public funding, which combines per capita government and partner/donor funding, is projected to decrease from US\$37 per capita in 2020 to US\$27 per capita in 2026.(23) This is far below the US\$86 estimate of per capita resource requirements for providing core PHC services in low-income countries.(24)

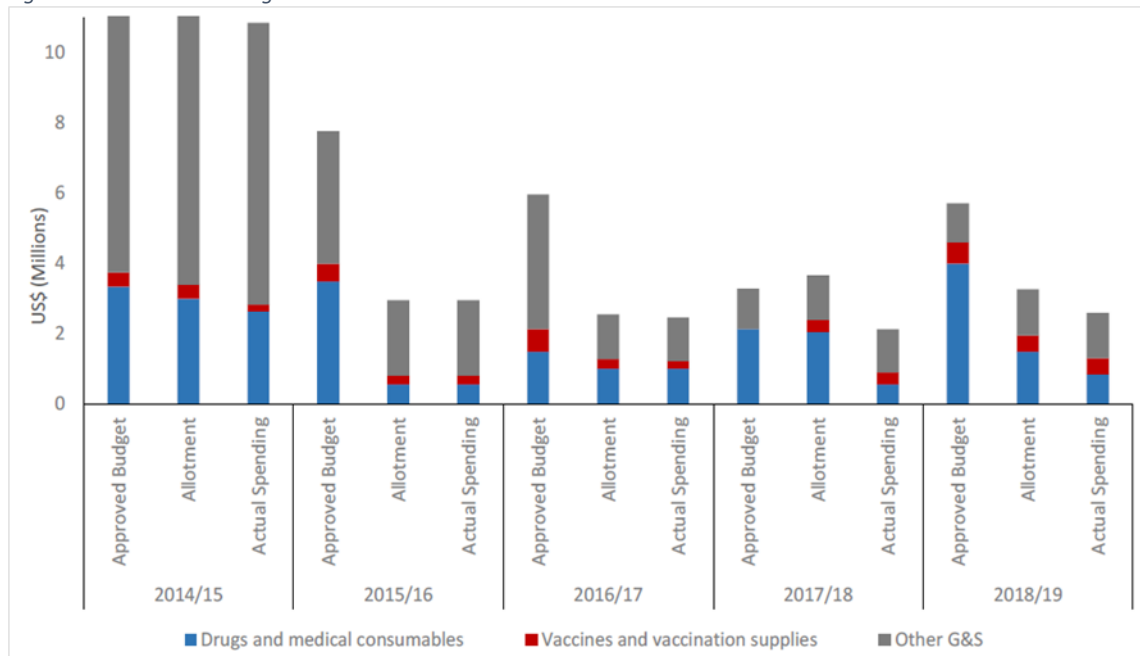
The divergence between approved budgetary allocations, allotments, and realized expenditures concerning pharmaceuticals, vaccines, and medical commodities within the health sector has exhibited an escalating trend over the course of time. This expanding rift can be predominantly attributed to the intricate challenges present within the existing framework of Public Financial Management. These challenges, encompassing multifaceted issues that hinder the seamless approval and timely disbursement of funds, have culminated in a noteworthy protraction of the implementation process.

It is pertinent to underscore Liberia's reliance on a cash-based budgeting system, where disbursements are contingent upon the generated revenue. This financial approach renders the disbursement rates vulnerable to fluctuations when the actual revenue falls short of the predetermined budget. This peculiarity further compounds the existing issues in the allocation and utilization of financial resources.

Of particular interest is the sector-specific variance prevalent in the health domain, which demonstrates the greatest disparity between allotments (disbursements) and the officially sanctioned budget. Although expenditures generally adhere closely to disbursement levels, a notable pattern emerges when scrutinizing allotments vis-à-vis the approved budget, as depicted in Figure 7. With the exception of fiscal years 2014/15 and 2015/16, allotments have vacillated within the range of 74 to 89 percent of the approved budget. Evidently, this divergence between allotments and the approved budget is particularly pronounced concerning pharmaceuticals and medical consumables. It is noteworthy, however, that once the allocated funds materialize, actual expenditures closely mirror the allotments.(18)

An intriguing anomaly emerges in fiscal year 2017/18, where allotments designated for pharmaceuticals and medical consumables nearly mirror the approved budget, yet the realized expenditures amounted to less than half of the disbursed funds. These discrepancies underline the intricate dynamics and challenges in aligning budgetary allocations with actual expenditures. This phenomenon is not confined solely to pharmaceuticals and medical consumables; it pervades the realm of vaccines and other goods and services as well, demonstrating analogous oscillations and variances.(18)

Figure 7: Government Budget Execution



The comprehensive evaluation of the financial requisites for the implementation of the National Health Strategic Plan 2022-2026 underscores a projected budget of approximately US\$844 million over the specified five-year period. This cost distribution is notably characterized by the prominence of human resources, accounting for 42% of the aggregate expenses, followed by medicines, commodities, and supplies at 23%, with program costs constituting 21%. It is, however, imperative to acknowledge that the anticipated financial outlay considerably surpasses the currently available resources.(5)

The government's envisaged contribution of US\$288 million pales in comparison to the US\$555 million that must be strategically mobilized to bridge the resource gap over the plan's timeline. Within this context, the Ministry of Health (MOH) primarily channels its spending toward staff compensations, complemented by a gradual diminishment in grants allocated to counties. For instance, in 2022, the total health appropriation amounts to US\$78,368,300.00, where a staggering 78% of this sum, equating to US\$61,367,357.00, is apportioned to salaries and goods and services.(5, 19)

In accordance with the 2023 MOH resource mapping report, the resource envelope for the fiscal year 2023 is valued at US\$121,503,805, with the government's contribution standing at US\$57,145,341 (47%), while external support encompasses US\$64,358,464 (53%). An evident decline in the MOH budget for FY2023, amounting to US\$57,145,398.00, is discernible, indicating a noteworthy reduction of US\$9,505,544 (14%) from the previous year. This financial retraction resonates predominantly in

compensation to employees, which constitutes a substantial 73% of the MOH budget, summing up to US\$41,950,905.(5, 19)

A salient predicament is observed in the expenditure allocation towards goods and services, encompassing vital medicines and supplies. The National Health Financing Strategy 2021 projects an inadequate annual allocation of US\$3.8 million (US\$0.73 per capita) for essential medicines, diverging significantly from the estimated cost of approximately US\$41.2 million (US\$7.9 per capita), thereby addressing a mere 9% of the resource requisites leaving a heavy financial burden on households.(5, 21) This underinvestment in essential medicines is starkly evident, with only a scant 2.2% of total public health spending from 2014 to 2019 being earmarked for drugs, vaccines, and medical commodities.(25) This deficiency exacerbates the frequent stockouts of essential medicines and medical supplies across healthcare facilities in Liberia. Consequently, a mere 37% of health facilities have access to even one essential tracer medicine, thereby eroding public confidence in the healthcare system and adversely affecting healthcare worker morale.(3)

The prevailing challenges in the public sector are compounded by factors such as elevated drug costs, inadequacies in the pharmaceutical supply chain, lax regulatory mechanisms, and unregulated cross-border circulation of medicines.(25)

A salient recommendation from the Lancet Commission on Essential Medicines for Universal Health Coverage, predicated on two distinct consumption scenarios, deduced that an aggregate financial commitment ranging from US\$77.4 billion to US\$151.9 billion, equivalent to a per capita outlay of USD \$13 to \$25, stands as an indispensable prerequisite for financing a rudimentary package of 201 essential medicines, collectively encompassing 378 discrete dosage forms, across the entire spectrum of LMICs.(26)

However, juxtaposed against this formidable financial requisition is the disconcerting reality of pharmaceutical expenditure in Liberia of only US\$0.73 per capita from public finances. This underscores the necessity for governments and national health systems to enhance funding for the integration of essential medicines within public sector benefit packages. Additionally, policies should be implemented to alleviate out-of-pocket spending on medicines. In instances where domestic financing is inadequate, the international community should fulfill its human rights obligations to support low-income countries in funding essential medicines. It is also imperative to invest in monitoring mechanisms that accurately track medicine expenditures, including those for essential medicines, within both public and private sectors, catering to distinct demographic groups and financial modes of expenditure. To address these challenges effectively, nations are encouraged to adapt the Commission's model to their unique contexts, creating contextually relevant benchmarks for measuring the provisioning of essential medicines. The Commission underscores the indispensability of adequate financing, policies to minimize out-of-pocket expenditures, and international support in fulfilling the right to access essential medicines, all of which contribute to bolstering equitable and sustainable healthcare systems.(26)

In response to these resource gaps and challenges, the Ministry of Health (MOH) has devised a new National Health Policy (2022-2031) and Strategic Health Plan (2022-2026). This policy shift aims to address disparities in healthcare financing and improve service delivery. The MOH's strategy includes the re-introduction of the Revolving Drug Fund (RDF) at primary health facilities and the implementation of cost-sharing at secondary and tertiary levels in the short to medium term. In the

medium to long term, the creation of the National Health Insurance Scheme (Liberia Health Equity Fund) is envisaged to ensure targeted free care for vulnerable populations.(4, 5, 21) The concept of Drug Revolving Funds (DRFs) is one of the fundamental strategies of the Bamako Initiative, launched in 1987 by African Ministers of Health (MoH) at the meeting in Bamako, Mali. The Bamako Initiative aimed at ensuring access to affordable health services and certain essential drugs for remote and underserved communities at cost recovery. Its main objective was to achieve better health by empowering community health workers to diagnose and treat common illnesses and to promote healthy lifestyles. This is based on the idea that the community is willing to contribute to healthcare if they are allowed to participate in the decision-making process which generates a feeling of ownership/ which is also a prerequisite for its sustainability.(27) A revolving drug fund (RDF) mechanism was previously implemented in Liberia from 1985 to 1989 with the objective to increase the availability of essential medicines and enhance their affordability. This mechanism was financed through out-of-pocket user fees collected at the point of service, with the funds intended to serve as a financing buffer for bulk procurement of medicines at lower prices.(28) The Ministry of Health (MOH) views the RDF as a best practice and a rational stepping stone toward establishing the Liberia Health Equity Fund (LHEF). Unlike the LHEF, which requires new legislation for implementation, the RDF only requires a presidential announcement, making it a quick and achievable way to raise financing for health. However, some partners, like the World Bank, have expressed reservations about reintroducing the RDF due to concerns about unequal access to health services that user fees may foster.(4, 18, 29, 30) Research has shown that user fees can create barriers to health services, particularly for vulnerable and low-income populations(31). Despite these concerns, the potential political support for the RDF has led to the suggestion of a prepayment version of the RDF. This model could function as a voluntary risk pool for essential medicines, financed by out-of-pocket expenditure, with exemptions for vulnerable groups through cross-subsidization. Implementing a prepayment version of the RDF may help inform future design elements of the LHEF and prepare the health system for its full implementation.(18, 32) Case studies like the Drug Revolving Program in Kolahun Medical hospital in Ilofalo County and the RDF schemes introduced by the Christian Health Association of Liberia demonstrate the potential of such mechanisms to improve access to medicines and healthcare services.(33) This policy approach aims to strike a balance between contributions from those with the capacity to pay and assistance from the government and partners, while ensuring that the very poor and vulnerable are adequately cared for. This shift represents a move from a 'Universal Free Care' model to a 'Targeted Free Care' approach. These interim policy measures are envisaged to bolster the healthcare financing system and improve access to essential health services.(4)

Purpose and Objectives of the Consultancy

The successful implementation of the RDF and cost-sharing mechanisms demands a meticulous assessment of their revenue potential, viability, and impact on the health system. As Liberia charts a course towards UHC and improved health outcomes, it is imperative to examine the health systems impact of both the RDF and cost-sharing mechanisms. The core objective of this consultancy is to estimate the potential contribution of these mechanisms in complementing existing resources to implement the sub-packages of the Essential Package for Universal Health Coverage. Striking a balance between generating sufficient revenue for the health sector and ensuring affordability and equity for the population is paramount. The Revolving Drug Fund (RDF) serves as a beacon of hope for ensuring the availability and affordability of essential medications at primary health facilities. By enabling

facilities to procure drugs and medicines at subsidized rates and replenish the stock through sales, the RDF seeks to address one of the most persistent barriers to quality healthcare in Liberia - the lack of consistent drug supply. However, as the RDF operates within a complex ecosystem of healthcare financing, its revenue potential and financial viability require rigorous evaluation to maximize its impact on healthcare delivery.

Cost-sharing at secondary level facilities represents another critical component of Liberia's healthcare financing strategy. Implemented with the aim of enhancing financial sustainability and resource mobilization, cost-sharing requires patients to contribute financially to the cost of healthcare services. While cost-sharing has the potential to increase the pool of resources available to healthcare facilities, its impact on healthcare utilization, particularly among vulnerable populations, warrants careful scrutiny to ensure equitable access to healthcare services.

The RDF and cost-sharing mechanisms present promising opportunities to address these challenges, but their effectiveness warrants a rigorous evaluation. To address these issues and ensure sustainable access to quality medications, the reintroduction of a revolving drug fund (RDF) has been proposed. Liberia's healthcare system has long struggled to provide access to essential medicines for its population, mainly due to economic constraints and inefficiencies in drug procurement and distribution. The concept of a revolving drug fund involves establishing a self-sustaining financial mechanism to purchase, stock, and distribute essential medications.

Objectives of the Assignment:

This assignment aims to achieve the following key objectives:

1. Analyze Liberia's health financing environment in the public sector to understand the existing resource gaps;
2. Assess the revenue potential, viability, and health systems impact of: (a) the RDF at primary health facilities, and (b) cost-sharing at secondary level facilities in the public sector;
3. Determine the optimal but affordable prices for medicines and services as provided in the Essential Package of Universal Health Coverage;
4. Determine how much money will be needed to cover the costs for medicines and services at primary and secondary levels from all sources i.e., individual and group contributions, government, and development partners;

Significance of the Assignment:

The findings of this assessment will serve as a compass for policymakers, healthcare administrators, and stakeholders, guiding evidence-based decision-making in Liberia's pursuit of effective healthcare financing strategies.

By understanding the revenue potential, viability, and health systems impact of the RDF and cost-sharing mechanisms, Liberia can strengthen its capacity to allocate resources efficiently, address health system challenges, and prioritize the health and well-being of all its citizens.

The insights gained from this study will contribute to Liberia's ongoing efforts to build a resilient and inclusive healthcare system that leaves no one behind.

Methodology

A mixed-methods approach combining desk research, data analysis, stakeholder consultations, and expert interviews was utilized. Between the 10th to 15th July 2023, a consultant was in country to conduct in-depth interviews with identified Key stakeholders and also collect and review relevant literature and policy documents relating to revolving drug fund and cost-sharing initiatives in the health sector. From the 8th to 9th September 2023 a site visit was conducted to two hospitals in Lofa county namely Kolahun Hospital and Tellewoyan hospital who are piloting RDF to get practical insights of implementation modalities.

The interviews were conducted to gather perspectives, insights and recommendations regarding the proposed introduction of the RDF and cost-sharing mechanisms. Various Key documents were shared for review including the National Operational Plan FY2023, National Financing Strategy 2022-2026, National Health Sector Strategic Plan 2022-2026 and 2021/2022 Liberia Harmonized Health Facility Assessment (HHFA).

Furthermore, a thorough literature review was conducted to identify relevant studies, reports, and academic articles on the RDF and cost-sharing strategies in Liberia and other comparable contexts. Databases such as PubMed, Google Scholar, World Bank, and WHO were searched using keywords such as "Revolving Drug Fund," "cost-sharing," "healthcare financing," and "Liberia."

Through this part of the study information was gathered that included Population demographics and socio-economic indicators, healthcare financing, procurement and distribution processes for essential medicines, Procurement Unit Prices of tracer medications, Utilization data, stakeholders' perspectives on critical success factors and potential health system impact of the proposed RDF and cost-sharing mechanisms.

Table 3: Key Stakeholders Interviewed and Information Provided

No	Stakeholders Interviewed	Official Role	Information Provided
1	Minister of Health	Overall, Policy Holder for the Health sector	Policy Direction for the Health Sector
2	Administration Unit, MoH	Governance administrative policies	Policy considerations for implementation of RDF and Cost-sharing
3	Department of Policy, Planning, and M&E Unit, MoH	Responsible for Policy, Planning, Budgeting and focal point for Universal Coverage Initiatives	Key Policy Documents on healthcare financing, Health policy, Operational Planning FY2023, Overall organization of the health sector
4	Pharmacy Division, Supply Chain Unit, MOH	Supply chain policies and plans	Unit prices for essential medicines in the Essential Package for Health Services, Pipeline from procurement to last mile distribution, costs of warehousing and Distribution
5	Procurement Unit, MOH	Procurement	Procurement Process for Essential Medicines
6	External Aid Coordination Unit/ Private Sector Engagement Unit, MoH	Coordination of Cooperating Partners, Private Sector support	Overview of Donor support provided to the MoH
7	Redemption Hospital , Kolahun and Tellewoyan management staff	Administer health supply management policies at the hospital level	Key Challenges faced and opportunities that RDF and Cost-sharing Present
8	Curative Services, MoH	Custodian of Policies and standards for curative services, costing of services and Cost-sharing initiative	Harmonized Health facility Assessment 2021/2022, Essential Package of Health Services (EPHSII)
9	World Bank Project Implementation, MoH	Coordinates World Bank projects that support the implementation of supported projects such as PBF in the MoH	World Bank Analytical documents on healthcare financing, Performance Framework contracts and Quality of Healthcare services
10	UNICEF	UN agency that provides technical assistance and support services that protect and empower Children and Youth	Scope of support provided and identification of exemption groups for RDF and Cost- sharing
11	WHO	Provides technical, material and financial support to build capacity and Policies towards a more resilient health care system	Perspectives on key Critical success factors for the RDF in the Liberian Context
12	Partners in Health	An International NGO, that facilitates access to lifesaving medicines, medical supplies, infrastructure upgrades and equipment in the Maryland County at no fee to the clients.	Overview of Operations and support provided. Challenges faced in the supply chain and perspectives on the potential health system impact of implementing RDF and Cost-sharing mechanisms

Data Analysis

The collected qualitative data was analyzed to identify recurring themes, challenges, and successes associated with the RDF and cost-sharing approaches and inform recommendations made in this report.

Revenue Potential, viability and health system Impact of RDF at Primary healthcare Level

For quantitative data, the methodology described by Management Sciences for Health was used to assess the revenue generation potential, viability of the RDF at Primary Health Care Levels.(34) Drug Revolving Fund (DRF) is a scheme where medicines are sold at a slight mark-up on the cost-price, and the revenue generated is used to replenish stocks, ensuring that medicines remain affordable and sustainably available. The DRF scheme is established with a one-time capital investment (seed money), typically provided by the government, donor agencies or interested communities which is used to

purchase an original stock of essential and commonly used medicines to be dispensed at prices sufficient to replace the stock of medicines and ensure a continuous supply.

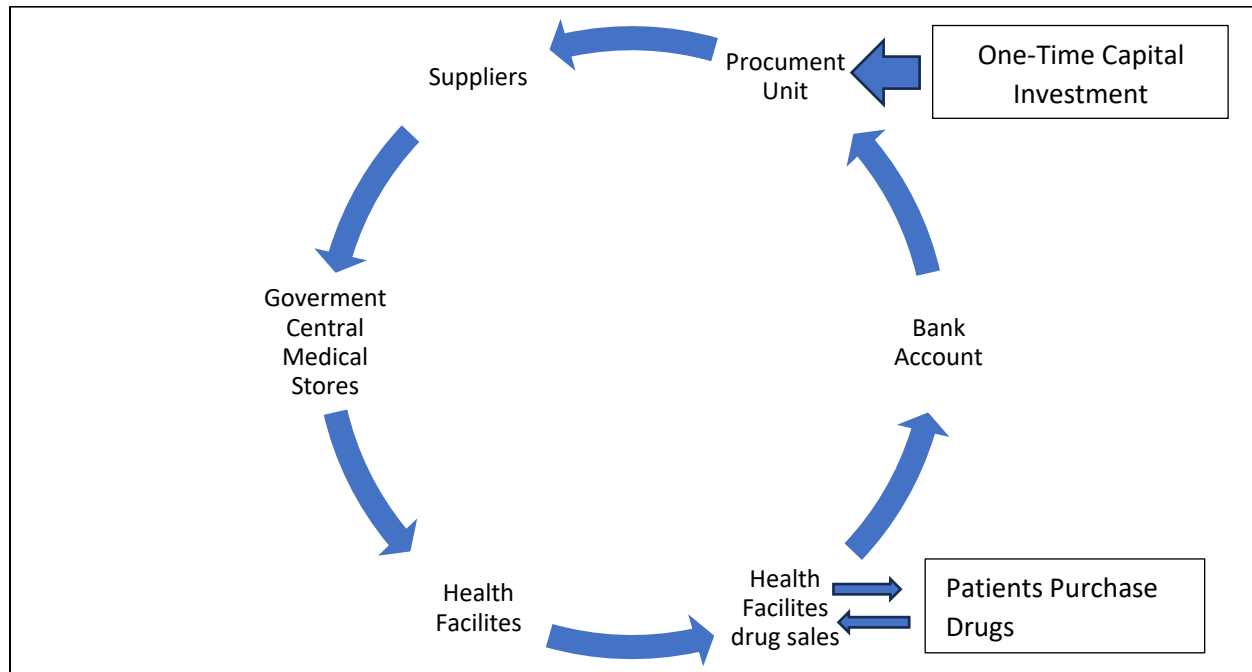


Figure 8: Adapted from Management Sciences for Health "Revolving Drug Funds and User Fees" 2012

Seed Capital Requirements: A revolving drug fund depends on ensuring that it is adequately capitalized at the beginning of the program to ensure that there are adequate drugs in the supply chain pipeline to begin and keep rotating. The Length of the Pipeline is measured in months, determined by the number of levels in the supply chain and the safety and average working stock at each level.(34, 35) The Pipeline requirements were obtained from the Procurement and Supply chain Units at the MoH. The diameter is determined by the final outflow which is the total value of the medicines dispensed. The final calculation for the Seed Capital requirements is simply the Total months required in the pipeline multiplied by total value of medicines dispensed in a month. In order to calculate the estimated total value of medicines dispensed in a month we multiply the Average number of patients utilizing services per month by the Average number of items prescribed per patient and by the Average Cost per Medicine prescribed.(34)

In order to Calculate the Average Cost per Medicine Prescribed, a List of essential medicines required for treatment of the leading causes of Morbidity from the FY2023 operational plan were selected for analysis. Following the Standard National Treatment guidelines, a standard course was defined as the quantity of medicines needed to treat a specific condition (Table 4). The Unit costs of each medicine provided by the supply chain Unit were adjusted by a Total of 40% to take into account the cost of freight, Insurance, Port fees,(20%) storage. warehousing and distribution to the last mile (20%). The Total Cost of each standard Treatment Course was calculated for each condition and the Average Cost per Medicine calculated.

Table 4: Selected Standard Treatment Courses of main Causes of Morbidity

Condition	Medicine	Formulation and Dosage	Duration of Treatment	Standard Treatment Course
Acute Respiratory Tract Infections	Amoxicillin	1g Tab, 8hrly	5 days	30 x 500mg Tab
Typhoid	Azithromycin	1g on day one then 500mg once a day	10 days	11 x 500mg Tab
Vaginal Discharge	Ceftriaxone	1g IM single dose	1 day	1 x 1g Vial
	Azithromycin	1g oral single dose	1 day	2 x 500mg Tab
	Metronidazole	500mg Tab, 12hrly	7 days	21 x 250mg tab
Urinary Tract Infection	Amoxicillin	500mg Tab , 8hrly	7 days	21 x 500mg Tab
Hypertension	Amlodipine	10mg once daily	30 days	30 x 10mg Tab
	Hydrochlorothiazide	12.5mg once daily	30 days	30 x 12.5mg Tab
Diabetes	Metformin	500mg once daily	30 days	30 x 500mg tab
	Glibenclamide	5mg once daily	30 days	30 x 5mg Tab
Asthma	Salbutamol Inhaler	1 pump	30 days	1 pump

Equation 1: Calculation of Total Seed Capital Required for Revolving Drug Fund

$$\text{Total Seed Capital} = \text{Total Months required in Pipeline} * \text{Average Number of patients per month} * \text{Average number of items dispensed per patient} * \text{Average cost per item dispensed (adjusted)}$$

RDF Revenue (Sales) Potential: The projected sales per annum is calculated by multiplying the Targeted Population for Sales by the Average number of items prescribed per person and by the Average price per medicines dispensed.

In this instance the targeted Population for RDF sales must take into consideration households' ability to pay, equity consideration for vulnerable populations and priority public

Equation 2: Calculation of annual RDF Revenue (sales) Potential

$$\text{Annual RDF Revenue} = \text{Targeted population utilization of services adjusted for exempted groups} * \text{Average number of items dispensed per patient} * \text{Average price per medicine adjusted for losses and Cost-recovery for exempted groups}$$

health programs to protect them from well documented concerns regarding the negative impact of user fees on utilization and access to cost-effective interventions. For this assignment the following groups were exempted from the Targeted groups for RDF drug sales:

1. Indigent Population living below the international Poverty rate of US\$ 1.90 per day. Estimated to be 44.4% of the Population(1)
2. Pregnant Women estimated by using the Population birth rate of 31.613 per 1000 population(36)
3. Population aged 5yrs or younger estimated to be 17% of the Population(37)
4. Population aged 65yrs or older estimated to be 3% of the Population(13, 37)
5. Population accessing TB services, based on incidence rate of 314/100,000 population(5, 19)
6. Population of Persons living with HIV which is estimated to be 35,000(5, 19)

To avoid a decapitalization of the fund over time, the average price per medicine dispensed that was calculated in the seed capital calculation was further adjusted with markups for Inflation, unexpected losses, and reduction in the cost recovery base due to the give aways of medicines to the exempted group. A markup of 15% was used to adjust for inflation and other losses while a reduction in the cost-recovery base of 69% of the population required an adjustment of 322% on the average price of medicines for full cost recovery from the sales to cover the cost of drugs given away to the exempted groups. This was compared with another scenario in which RDF sales would only cover the targeted population and the exempted group would be covered by a subsidy from partners or the state. As the Utilization rate used is a national utilization rate of 0.8 OPD visits per person year(3), this is disaggregated using the assumption that 70%, 20% and 10% of the Utilization would occur at Primary, secondary and Tertiary levels.

In order to assess the revenue Potential of the RDF Revenue, the following equation to ascertain if any additional revenue was generated by the RDF scenarios;

Equation 3: Calculation of RDF revenue Potential

$$\text{RDF Revenue} = (\text{Total Sales Revenue from Medicines}) - (\text{Medicine Procurement Costs})$$

To assess Viability and Cost Recovery of the RDF, the following equation was used;

Equation 4: Calculation of RDF Cost Recovery rate

$$\text{Cost Recovery Rate} = (\text{Total Revenue} / \text{Total Expenditure}) * 100\%$$

The Total expenditure includes drug procurement, storage and distribution

Revenue Potential, Viability and Health system Impact of Cost-sharing at Secondary Level

To establish a suitable base from which to project the Revenue Potential of Cost-sharing of services at Secondary Level, the Total cost of outpatient care services and inpatient care services were established as a basis on the estimated utilization rates and the costs related to these services.

Three alternative cost sharing scenarios in which 20%, 30%, 40% of total costs were attributed to cost sharing were tested with constant assumptions on the inpatient admission rates per annum per 100 members, average length of stay and the number of visits per annum for outpatient care services to be at 6.7, 3 and 0.8 respectively. The assumptions used for the utilization and the unit costs are as listed below;

- Inpatient admission 6.7 per 100 persons: Has been assumed at a constant rate.(3)
- Average length of stay of 3 days: Has been assumed at a constant rate.

The following Unit costs were obtained from the WHO-CHOICE estimates of cost for inpatient and outpatient health service delivery report of 2021.(38) The Unit costs were converted from 2010 US\$ PPP to 2023 US\$ using an online GDP deflator calculator(39);

- Mean Cost of PHC Outpatient Care per visit (without drugs): USD\$ 4.57
- Mean Cost of Secondary Outpatient Care per visit (without drugs): USD\$ 6.41

- Mean Cost of Tertiary Outpatient Care per visit (without drugs): USD\$ 6.72
- Mean Cost of Secondary Inpatient care per day of confinement (without drugs): USD\$ 13.06
- Mean Cost of Tertiary Inpatient care per day of confinement (without drugs): USD\$ 16.17

Pharmaceutical Costs: The cost share for OPD was calculated in the RDF model. However, for Inpatient services, it is assumed that Drug costs constitute 61% of total cost of services. This translates to the following Units:

- Mean Unit Cost of Drugs for Secondary Inpatient care per day of confinement: US\$ 20.43
- Mean Unit Cost of Drugs for Tertiary Inpatient care per day of confinement: US\$ 25.29
- At present, responsibility for the procurement of essential medicines is divided: Development partners buy program drugs and the government buys all non-program essential medicines. The Global Fund purchases HIV, TB, and malaria commodities, as well as diagnostic equipment and supplies; USAID buys malaria and family planning commodities; Gavi, the Vaccine Alliance covers vaccinations; the United Nations Population Fund buys family planning commodities; and UNICEF buys integrated community case management of childhood illness products. The Government currently does not procure any of these commodities and have been excluded from this analysis on the assumption that donors will continue to support these procurements.

Affordability: The affordability of the calculated Average selling price for standard treatments and cost of services for those on low wages was assessed by comparing the cost of treatment to the daily wage of the lowest paid government worker. The values obtained provide a measure of affordability. It was determined that the lowest paid workers receive around US\$150 a month or US\$7 a day.

How much Money is Needed from all Sources? Determination of how much money would be needed to cover the costs of Medication at primary and secondary Levels from all sources is determined by examination of the total resources needed for annual drug procurement against the calculated cost share of drugs and annual government allocation for drug procurement to determine the deficit/required donor contribution required. Determination of the money needed to cover the costs of services is determined by comparing the Total cost of services against estimated government allocations to County health teams and calculated cost share to determine the deficit or Donor requirement.

Synthesis and Recommendations: The findings from the literature review, data collection, and analysis were synthesized to formulate evidence-based recommendations to optimize the revenue potential, viability, and health systems impact of the RDF and cost-sharing in Liberia's healthcare financing landscape. Based on the findings, provide actionable recommendations for improving the RDF and cost-sharing mechanisms to enhance revenue potential, sustainability, and health system impact. Based on the assessment findings, develop evidence-based recommendations to optimize the revenue potential, viability, and health systems impact of the RDF and cost-sharing. Consider stakeholder input to formulate actionable strategies for healthcare financing enhancement in Liberia.

Limitations of the Assessment

The main limitation of the assessment was scarcity of some of the key data required to do in-depth analysis. In this regard, the main data used was secondary aggregated data from the identified sources. Also, the formulation of the revenue model is based on averages of data provided, expert opinion and prudent assumptions. Time was another limiting factor given the nature of the work. The above limitations notwithstanding, the consultant has made every effort to conform to international norms and standards in order for the analysis to make meaningful recommendations.

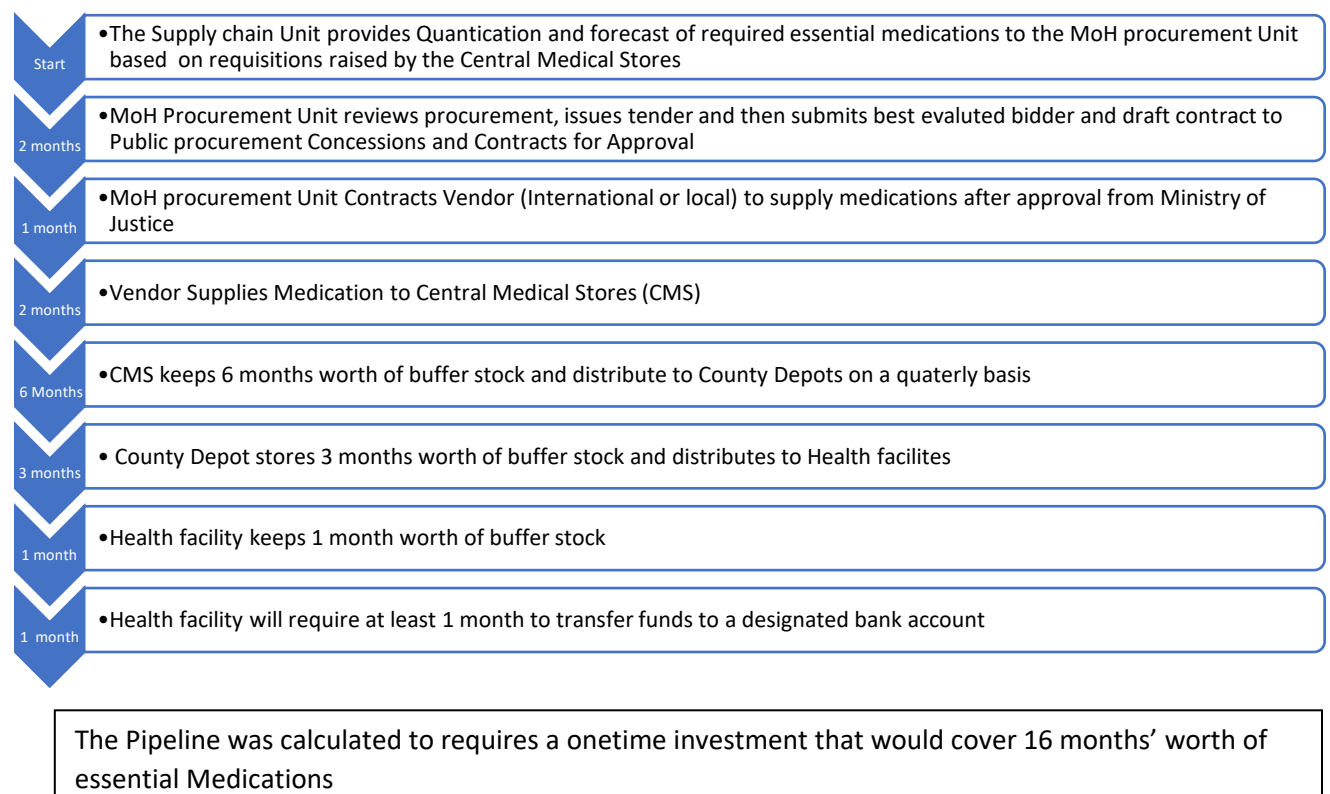
Key Findings

The Revolving Drug Fund (RDF) at Primary Health Facilities:

Calculation of Seed Capital Requirements;

The following is a figure that depicts the estimated Pipeline for essential drug procurement and distribution for the proposed Revolving Drug Fund;

Figure 9: Pipeline Calculations for Capitalizing the RDF



The duration of a procurement pipeline spanning a period of 16 months introduces a considerable and intricate set of challenges, consequently posing noteworthy risks in the realm of drug procurement. These risks are underscored by the dependencies on a cascade of factors, each possessing the potential to derail the seamless progression of the procurement cycle. The interplay of these factors, including the availability of funds, the duration of the tendering process, the intricate logistics of drug distribution from centralized medical stores to the farthest reaches of service delivery, the geographical distance for drug delivery, and the operational availability of banking facilities for health

institutions to channel funds for prospective Revolving Drug Funds (RDF) sales, collectively coalesce to engender a complex and multifaceted landscape of challenges.

Chief among these challenges is the intricate dance with fiscal resources. The availability of funds forms an elemental determinant that significantly influences the efficacy of the procurement pipeline. Furthermore, the length of the tendering process invariably affects the expediency of procurement, with a longer tender period potentially amplifying the risk of delays. In a parallel vein, the availability of banking services for health institutions to affect the necessary fund deposits for prospective RDF sales emerges as an additional determinant of the procurement pipeline's efficacy. The harmonization of these diverse factors poses an intricate challenge, accentuating the inherent fragility of a 16-month timeline that, in turn, can disrupt the consistent and timely availability of essential drugs.

Based on the 2023 Procurement Unit costs for essential medicines, the total cost of treating each of the selected conditions in Table 5 was calculated. These costs were adjusted by 40% for Insurance, freight, Storage and Distribution to the last mile as show below;

Table 5: Average cost of Drugs used to treat Main Causes of Morbidity according to the National Standard Treatment Guidelines

Condition	Medicine	Formulation and Dosage	Duration of Treatment	Standard Treatment Course	Unit Cost	Quantity	Total Cost of Standard treatment Cost unadjusted	Total of Standard treatment cost Adjusted for Insurance, Storage and Distribution
Acute Respiratory Tract Infections	Amoxicillin	1g Tab, 8hrly	5 days	30 x 500mg Tab	0.04	30	\$1.20	\$1.68
Typhoid	Azithromycin	1g on day one then 500mg once a day	10 days	11 x 500mg Tab	0.25	11	\$2.75	\$3.85
Vaginal Discharge	Ceftriaxone	1g IM single dose	1 day	1 x 1g Vial	0.6	1	\$0.60	\$0.84
	Azithromycin	1g oral single dose	1 day	2 x 500mg Tab	0.25	2	\$0.50	\$0.70
	Metronidazole	500mg Tab, 12hrly	7 days	21 x 250mg tab	0.01	21	\$0.21	\$0.29
Urinary Tract Infection	Amoxicillin	500mg Tab, 8hrly	7 days	21 x 500mg Tab	0.04	21	\$0.84	\$1.18
Hypertension	Amlodipine	10mg once daily	30 days	30 x 10mg Tab	0.04	30	\$1.20	\$1.68
	Hydrochlorothiazide	12.5mg once daily	30 days	30 x 12.5mg Tab	0.07	30	\$2.10	\$2.94
Diabetes	Metformin	500mg once daily	30 days	30 x 500mg tab	0.02	30	\$0.60	\$0.84
	Glibenclamide	5mg once daily	30 days	30 x 5mg Tab	0.02	30	\$0.45	\$0.63
Asthma	Salbutamol Inhaler	1 pump	30 days	1 pump	1.71	1	\$1.71	\$2.39
							Average Cost of Dispensed Drugs	
							\$ 1.11	\$ 1.55

The adjusted Average cost of the Dispensed Drugs was calculated to be US\$ 1.55 per dispensed item. To calculate the Total seed capital required this figure was multiplied by the estimated OPD visits a month of 349,908, the Average number of items prescribed per visit of 3 items and the 16 months required for the Pipeline.

Table 6: Total Seed capital Required for RDF

Item	Value
Pipeline months	16
Population	5,248,621
OPD utilisation rate	0.8
Average number of OPD visits per month	349,908
Average Number of Items prescribed per visit	3
Average Cost of each Item prescribed based on STG USD\$	1.55
TOTAL SEED CAPITAL REQUIRED USD\$	\$ 25,993,461.50

The analysis of seed capital requirements for establishing a Revolving Drug Fund (RDF) reveals a substantial estimation of US\$25,993,491.50, which is about 15 times the annual government expenditure on essential medicines. This significant financial disparity highlights the challenge of funding the RDF's establishment. To bridge this gap, effective donor engagement is crucial. Donors will need to play a pivotal role in providing the necessary resources for this initiative, as government

funding alone is inadequate. Collaborative efforts between donors and governmental authorities are essential to realize the RDF's vision, enhance drug accessibility, and improve healthcare provision.

RDF Revenue Potential

The RDF is a mechanism where primary health facilities maintain a revolving pool of funds to procure essential medicines and then replenish the fund by selling these medicines to patients at affordable prices. The revenue potential of RDF depends on factors such as patient volume, types of medicines dispensed, and pricing strategies. In this model, the Target Population was calculated taking into consideration the various potential exemption groups as per table 7 below;

Table 7: Calculation of Targeted Population for RDF sales

Target Population	Source of Data	Number of People
Population of Liberia	Population	5,248,621
Indigent	Based on 44.4% living Below Poverty rate	2,330,388
Pregnant Women	Based on Birth rate of 31.613 per 1000 pop	165,925
Under 5	Based on 17% of Pop	892,266
Aged 65 yrs. and Older	Based on 3% of Pop	157,459
TB clients	Based on TB Incidence 314/100,000 pop	16,481
People Living with HIV		35,000
	Total Number of Exempted Persons	3,597,517
Targeted Population for RDF sales		1,651,104
	Proportion of Population Exempted from RDF sales (%)	69

Upon considering the distinct exemption groups that have been identified, it becomes evident that a significant portion of the population, encompassing 69%, is eligible for exemption from Revolving Drug Fund (RDF) sales. This exemption encompasses a total population of 3,597,517 individuals. Among these exempted individuals, a notable subgroup is represented by the indigent population, comprising a substantial majority of 65%—equivalent to 2,330,388 individuals. The prominence of the indigent population among the exemptions signals the necessity for functional targeted approaches to ensure their equitable access to essential medicines.

In order to calculate the selling price per item dispensed, two scenarios were calculated. First scenario is where the RDF sales are made only to the targeted Population and the exempted population is provided the drugs from a subsidy. In this scenario the selling price is adjusted to take into consideration inflation and other losses at 15%. In the second scenario, the selling price is adjusted for full cost recovery from the targeted group to also cover for the cost of medicines given away to the exempted group, in this case the adjustment required was 323% as per Table below;

Table 8: Calculation of Selling Price per item Dispensed

Condition	Medicine	Formulation and Dosage	Duration of Treatment	Standard Treatment Course	Unit Cost	Quantity	Total Cost of Standard treatment Cost unadjusted	Total of Standard treatment cost Adjusted for Insurance, Storage and Distribution	Selling Price adjusted for Inflation and losses in RDF Revenue Model	Selling Price adjusted for Full Cost recovery of drugs dispensed to Exempted Group RDF Revenue Model	
Acute Respiratory Tract Infections	Amoxicillin	1g Tab, 8hrly	5 days	30 x 500mg Tab	0.04	30	\$1.20	\$1.68	\$1.93	\$6.24	
Typhoid	Azithromycin	1g on day one then 500mg once a day	10 days	11 x 500mg Tab	0.25	11	\$2.75	\$3.85	\$4.43	\$14.30	
Vaginal Discharge	Ceftriaxone	1g IM single dose	1 day	1 x 1g Vial	0.6	1	\$0.60	\$0.84	\$0.97	\$3.12	
	Azithromycin	1g oral single dose	1 day	2 x 500mg Tab	0.25	2	\$0.50	\$0.70	\$0.81	\$2.60	
	Metronidazole	500mg Tab, 12hrly	7 days	21 x 250mg tab	0.01	21	\$0.21	\$0.29	\$0.34	\$1.09	
Urinary Tract Infection	Amoxicillin	500mg Tab, 8hrly	7 days	21 x 500mg Tab	0.04	21	\$0.84	\$1.18	\$1.35	\$4.37	
Hypertension	Amlodipine	10mg once daily	30 days	30 x 10mg Tab	0.04	30	\$1.20	\$1.68	\$1.93	\$6.24	
	Hydrochlorothiazide	12.5mg once daily	30 days	30 x 12.5mg Tab	0.07	30	\$2.10	\$2.94	\$3.38	\$10.92	
Diabetes	Metformin	500mg once daily	30 days	30 x 500mg tab	0.02	30	\$0.60	\$0.84	\$0.97	\$3.12	
	Glibenclamide	5mg once daily	30 days	30 x 5mg Tab	0.02	30	\$0.45	\$0.63	\$0.72	\$2.34	
Asthma	Salbutamol Inhaler	1 pump	30 days	1 pump	1.71	1	\$1.71	\$2.39	\$2.75	\$8.89	
							Average Cost of Dispensed Drugs	\$ 1.11	\$ 1.55	\$ 1.78	\$ 5.75

Two distinct treatment cost scenarios warrant thorough consideration, each carrying varying implications for affordability and patient access. In the initial scenario (Partial recovery), the calculated average selling price per item designated for the targeted population stands at US\$1.78. It is important to note, however, that this computation exclusively accounts for drugs that are purchased using cash, omitting the cost associated with drugs allocated to exempted groups. In order to holistically recoup incurred costs, encompassing both the actual pharmaceutical outlay and those disbursed to exempted segments, the target demographic would need to procure each item at a rate of US\$5.75 (Full Cost recovery).

The comparative analysis of these two scenarios brings to light the intricate relationship between treatment costs and affordability. It becomes evident that in the first scenario, where each item is priced at an average of US\$1.78, the financial burden of treating respective medical conditions remains affordable. Particularly, when juxtaposed against the backdrop of the lowest daily wage, quantified at US\$7, the affordability of treatment costs is evident.

However, the second scenario reveals a different picture. Within this scenario, the cost of treating ailments such as Typhoid, Hypertension, and Asthma surges to an extent that is unaffordable. Notably, even though the computed average cost of US\$5.75 falls short of the US\$7 affordability threshold, it is crucial to acknowledge that the dispensation of an average of three items per treatment regimen might engender a scenario wherein patients opt to forego treatment due to financial constraints.

The Revenue Potential of both scenarios are compared in table 9. The revenue in the partial recovery model, shows that on average the RDF would raise on average US\$7.2 million in sales but would require a subsidy of US\$ 12.5 million to cover the costs of drugs of exempted group to avoid decapitalization of the fund. Without this subsidy, this scenario only works if RDF drugs are sold on a cash basis only.

Table 9: Revenue Potential of Two RDF models

RDF Revenue Potential (Full Cost- recovery Model)	Value in USD\$	Cost Recovery Rate
Procurement Costs (Seed capital adjusted for 12 months) for comparison with Sales	\$ 19,495,096	
Year 1 Sales	\$ 22,453,601	
RDF Revenue Potential Year 1	\$ 2,958,505	115%
Year 2 Sales	\$ 23,127,209	
RDF Revenue Potential Year 2	\$ 3,632,113	119%
Year 3 Sales	\$ 23,821,025	
RDF Revenue Potential Year 3	\$ 4,325,929	122%
RDF Revenue Potential (Partial recovery Model)	Value in USD\$	
Year 1 Sales	\$ 6,950,854	
RDF Revenue Potential Year 1	\$ (12,544,242)	36%
Year 2 Sales	\$ 7,159,379	
RDF Revenue Potential year 2	\$ (12,335,717)	31%
Year 3 Sales	\$ 7,374,161	
RDF Revenue Potential Year 3	\$ (12,120,935)	38%

Conversely, the full cost recovery model presents a more robust revenue projection, forecasting an average annual revenue of US\$23.1 million. Notably, this model further boasts positive financial balances averaging US\$3.6 million on an annual basis. Nonetheless, it is imperative to exercise caution when interpreting these figures. The viability of this model hinges critically on two key factors—the acceptability of the elevated selling price and the seamless implementation of exemption criteria. However, it is prudent to acknowledge the potential impracticality of achieving these figures within the complex real-world context.

Optimal Prices for Medicines: The procurement and supply unit at the MoH should source RDF drugs from non-profit suppliers abroad, or from local sources, where these are available. Annex 1 includes the prioritized list of essential medicines from the Procurement and Supply chain Unit of the MoH. The procurement Unit prices have been adjusted by applying a markup of 20% to take into account the cost of freight, insurance and delivery to the Central medical Stores (CMS). For the Procurement Prices at the Health facility, an additional adjustment of 61% markup on the procurement Unit prices from MoH was made for storage, delivery to last mile and a buffer for losses and inflation. However, it is proposed that a uniform fee per item (US\$1.78) dispensed be charged at the health facilities as it is much easier to account for sales than an individualized fee for every item sold. Cross-subsidies are operated from the common, cheaper drugs to some of the more expensive ones. These prices for patients should also be uniform across the Country so that there is some cross-subsidy from the closer facilities to the more remote ones, which are more expensive to supply and supervise. To ensure the RDF's success, reliable sources of quality medicines must be identified. The drug procurement strategy requires that drug stocks are front loaded using the seed fund to avoid responding to situations of stock-out and emergencies.

Case study of RDF at Kolahun Hospital in Lofa County

In August 2021, Kolahun Hospital, located in Lofa County, embarked on a journey to revamp its healthcare services and ensure access to essential medications for its community members. The hospital resurrected its Revolving Drug Fund (RDF), which had been operational before the war but had languished during the years of conflict. This case study sheds light on the remarkable success story of Kolahun Hospital's RDF and how it has positively impacted the community's healthcare access.

Community-Led Initiative

The revival of the RDF at Kolahun Hospital was not a top-down decision but a grassroots effort that underscored community engagement. Traditional leadership, the District Commissioner, the Board Chair, and the Medical Director played pivotal roles in organizing and spearheading this initiative. Together, they galvanized community support and involvement, making it a truly community-led endeavor. They are also the signatories to the account for the RDF.

Seed Capital and Financing

To kickstart the RDF, a total of US\$14,000 was raised. This seed capital came from a combination of sources:

1. Remittances: \$5,000 from members of the community who had migrated and wanted to contribute to their local healthcare.
2. NGO Support: An additional \$5,000 was generously provided by the NGO "Restore Hope."
3. Household Contributions: Every household in the community contributed 100 Liberian Dollars (LRD), which collectively amounted to a meaningful contribution to the RDF.

Infrastructure and Staffing

With the funds in place, the RDF committee was able to hire three Community Dispensers at US\$150 each per month and two cashiers at US\$100 per month to provide round-the-clock services. This ensured that the community had access to essential medications whenever they were needed.

Procurement and Accessibility

The RDF operates on a system where pharmacists trigger requisitions to the RDF committee for the procurement of three months' worth of stock from private wholesalers in Monrovia. This system ensures a steady supply of medicines to meet the community's needs.

Inclusivity and Affordability

One remarkable aspect of Kolahun Hospital's RDF is its commitment to inclusivity. Those who are unable to pay for their medications must have someone within the community vouch for them. This requirement has been essential to maintaining the sustainability of the RDF, as less than 5% of visits fall under this category.

Transparency and Accountability

Billing at the RDF is conducted meticulously, with prices per item clearly outlined. A price list is provided to both cashiers and Community Dispensers, and a triplicate receipt book is used to ensure transparency. A 50% markup is charged on the wholesale prices obtained to support the RDF's financial sustainability. Monthly audits are conducted to verify sales against stock balances. These audits also help identify and address issues such as expired drugs and drugs given out gratis.

Utilization of Funds

Funds generated through the RDF are solely dedicated to three primary purposes:

1. Replenishing Drug Supplies: Ensuring a consistent and ample supply of essential medications for the community.

2. Staff Compensation: Fair wages for cashiers and Community Dispensers who provide critical services.
3. Stationary and Operational Expenses: Covering the costs associated with maintaining efficient operations.

Impact and Transformation

The impact of Kolahun Hospital's RDF has been nothing short of transformative. The revived fund has:

- Dramatically Improved Access: Community members now have 24/7 access to essential medications, which has significantly improved health outcomes.
- Reduced Financial Barriers: The requirement for someone to vouch for those unable to pay has made healthcare accessible to all, reducing financial barriers.
- Financial Sustainability: The careful management of funds and the 50% markup on wholesale prices have ensured the RDF's financial sustainability. This is also significantly Cheaper than the private retailers that have an average 300% mark up on the same drugs.
- Enhanced Transparency: The use of triplicate receipt books and monthly audits has fostered transparency and accountability.

Case study of RDF at Tellewoyan Memorial Hospital

In December 2021, Tellewoyan Memorial Hospital, situated in Lofa County, Liberia, embarked on a transformative journey to enhance healthcare access for its community. The hospital initiated its Revolving Drug Fund (RDF), a vital component of its commitment to providing essential medications to its patients. This case study highlights the journey of Tellewoyan Memorial Hospital and the challenges faced and lessons learned in managing the RDF.

Initiation and Approval

The inception of the RDF at Tellewoyan Memorial Hospital was marked by a significant milestone—the approval of the project by the hospital's board. This approval was granted in December 2021, marking the formal beginning of the RDF initiative.

Key Drivers and Team

The RDF at Tellewoyan Memorial Hospital was primarily driven by the dedicated efforts of the facility's staff. Key individuals involved in this initiative included the Hospital Administrator, Medical Director, Accountant, and various facility staff members who were reassigned as cashiers to oversee the RDF's financial operations.

Seed Capital and Drug Procurement

To launch the RDF, a seed capital of US\$20,000 was accumulated over the course of one year from the facility's allotment. This capital served as the foundation for procuring essential medications. Two wholesale vendors in Monrovia extended their support by providing drugs worth US\$46,000, significantly bolstering the RDF's medication inventory.

Diverse Revenue Sources

In addition to selling RDF drugs, Tellewoyan Memorial Hospital diversified its revenue streams to ensure financial sustainability. This included charging a 500 Liberian Dollar (LRD) consultation fee, fixed charges for laboratory services, and bundled costs for surgical procedures.

Financial Management and Fund Utilization

The RDF funds are co-mingled with other hospital revenues and are strategically used to supplement delayed allotments, ensuring a continuous supply of medications. This approach has been critical in maintaining consistent healthcare services for the community.

Operational Challenges

While the RDF at Tellewoyan Memorial Hospital has brought about substantial benefits, it has not been without its challenges:

1. **Accounting Complexity:** Managing funds from multiple sources and co-mingling them with other hospital revenues has presented accounting complexities, requiring diligent record-keeping and financial management.
2. **Staff Orientation:** Staff reassigned to cashier roles faced a learning curve in managing the RDF's financial operations effectively.
3. **Local Political Support:** Engaging local political support has been challenging, highlighting the need for community and political buy-in to ensure the sustainability of the RDF.

Lessons Learned

The journey of Tellewoyan Memorial Hospital's RDF has provided valuable lessons:

1. **Robust Financial Management:** Effective financial management, including clear record-keeping and transparency, is vital for the success and sustainability of an RDF. Funds raised for RDF should not be co-mingled with funds raised from cost-sharing initiatives as it becomes difficult to account for the funds and expenses used on non-RDF related activities.
2. **Staff Training and Orientation:** Providing comprehensive training and orientation to staff members responsible for RDF operations is essential for seamless execution.
3. **Community Engagement:** Building local political and community support is crucial for long-term success.

Tellewoyan Memorial Hospital's RDF is a testament to the hospital's commitment to improving healthcare access in Lofa County. While facing challenges, the RDF has successfully expanded access to essential medications and diversified revenue streams. The lessons learned from this initiative can serve as a blueprint for other healthcare facilities seeking to implement similar programs and strengthen their communities' healthcare access.

Cost-sharing at Secondary Level Facilities

Revenue Potential: Cost-sharing involves patients contributing financially for certain healthcare services at secondary level facilities. The revenue potential of cost-sharing depends on the range of services subjected to cost-sharing, patient willingness to pay, and the socio-economic context. In this instance starting point is to calculate the Total cost of Inpatient and Outpatient services.

Figure 10: Cost of Outpatient and Inpatient services

Total Cost of Outpatient and Inpatient Services In Liberia	Value
Population	5,248,621
OPD utilization rate per annum	0.8
Admission rate	0.031613
Total Number of OPD visits per Year	4,198,897
Number of OPD Visits Per year at PHC	2,939,228
Number of OPD Visits per Year at Secondary	839,779
Number of OPD Visits Per Year at Tertiary	419,890
Total Number of Admissions Per Year	165,925
Number of Admissions per Year at Secondary	132,740
Number of Admissions Per Year at Tertiary	33,185
Unit Cost of each OPD PHC Visit (USD\$) -Without Drugs	4.57
Unit Cost of each OPD Secondary Visit (USD\$)- Without Drugs	6.41
Unit Cost of each OPD Tertiary Visit (USD\$)- Without Drugs	6.72
Unit Cost of Each Inpatient Bed Day - Secondary (USD\$)- Without Drugs	13.06
Unit Cost of Each Inpatient Bed Day - Tertiary (USD\$)- Without Drugs	16.17
Average of Length of Stay per Admission in Days	3
Total Annual Cost of OPD Services at PHC (Without Drugs) US\$	13,432,271
Total Annual Cost of OPD Services at Secondary (Without Drugs) US\$	5,382,986
Total Annual Cost of OPD Services at Tertiary (Without Drugs) US\$	2,821,659
Total Cost of OPD Services at all Levels (without drugs) US\$	21,636,915
Total Annual Cost of Inpatient Services at Secondary (Without Drugs) US\$	5,200,742
Total Annual Cost of Inpatient Services at Tertiary (Without Drugs) US\$	1,609,801
Total Cost of Inpatient Services at All Levels (without Drugs) Us\$	6,810,543
Total Cost of OPD and Inpatient All Levels (without Drugs) US\$	28,447,459

Based on the estimated Utilization rates, admission rates, Unit costs, the Total Cost of all Outpatient Department (OPD) and Inpatient services (without drugs and Lab tests) was calculated to be US\$ 28.4 Million per annum. OPD services constitutes approximately 76% of these costs (US\$ 21.6 million) while Inpatient services account for 24% (US\$6.8 million).

In order to assess the revenue potential of cost-sharing on OPD and Inpatient services, three scenarios were examined in which 20%, 30% and 40% of the cost of services was charged.

Table 10: Revenue Potential and Cost-recovery Scenarios for OPD services

Cost of OPD services	PHC	Secondary	Tertiary
Total Cost of services OPD services	13,432,271	5,382,986	2,821,659
Number of Beneficiaries OPD visits	2,939,228	839,779	419,890
Cost per Beneficiary OPD per Visit	\$ 4.57	\$ 6.41	6.72
Number of Targeted Beneficiaries OPD Visits (adjusted for Exemption)		260,332	130,166
Scenario 1: Target Population is charged 20% of Cost of Service		\$ 1.28	\$ 1.34
Scenario 2: Target Population is charged 30% of Cost of Service		\$ 1.92	\$ 2.02
Scenario 3: Target Population is charged 40 % of Cost of Service		\$ 2.56	\$ 2.69
Revenue Potential Scenario 1 Targeted Population		\$ 333,745	\$ 174,943
Revenue Potential Scenario 2 Targeted Population		\$ 500,618	\$ 262,414
Revenue Potential Scenario 3 Targeted Population		\$ 667,490	\$ 349,886
Cost Recovery Rate Scenario 1		6%	6%
Cost Recovery Rate Scenario 2		9%	9%
Cost Recovery Rate Scenario 3		12%	12%

The cost per Beneficiary for each OPD visit without drugs is estimated to be US\$ 4.57 at primary health care level, US\$6.41 at Secondary Level and US\$ 6.72 at Tertiary Level. In scenario 1, the cost sharing price per OPD visit is US\$ 1.28 at Secondary and US\$ 1.34 at Tertiary Level with Cost recovery rate of 6%. In Scenario 2, the cost-sharing price per OPD visit is US\$ 1.92 at Secondary and US\$2.02 at Tertiary Level with cost recovery rate of 9%. Scenario3, shows a cost-sharing price per OPD visit of US\$ 2.56 at Secondary and US\$ 2.69 at Tertiary level with recovery rate of 12%. Taking into consideration the threshold of US\$7 for affordability, all three scenarios look plausible and affordable. However, a more nuanced consideration that factors in the cost of medicines at the selling price of US\$1.78 per item, with an average dispensation of three items per visit, yields a more intricate analysis.

Within this dimension, only Scenario 1 emerges as an economically feasible and affordable model. The confluence of the cost-sharing price per visit, alongside the associated drug cost, aligns with the threshold of affordability. Conversely, Scenarios 2 and 3, while appearing plausible within the broader affordability context, reveal limitations when scrutinized through the lens of associated drug costs.

Table 11: Revenue Potential and Cost-Sharing Scenarios of Inpatient Services

Cost of Inpatient Services	PHC	Secondary	Tertiary
Total Cost of services IPD services		5,200,742	1,609,801
Number of Beneficiaries IPD visits		132,740	33,185
Cost per Beneficiary IPD per Admission		\$ 39.18	\$ 48.51
Number of Targeted Beneficiaries IPD (adjusted for Exemptions)		41,149	10,287
Scenario 1: Target Population is charged 20% of Cost of Service		\$ 7.84	\$ 9.70
Scenario 2: Target Population is charged 30% of Cost of Service		\$ 11.75	\$ 14.55
Scenario 3: Target Population is charged 40 % of Cost of Service		\$ 15.67	\$ 19.40
Revenue Potential Scenario 1 Targeted Population		\$ 322,446	\$ 99,808
Revenue Potential Scenario 2 Targeted Population		\$ 483,669	\$ 149,711
Revenue Potential Scenario 3 Targeted Population		\$ 644,892	\$ 199,615
Cost Recovery Rate Scenario 1		6%	6%
Cost Recovery Rate Scenario 2		9%	9%
Cost Recovery Rate Scenario 3		12%	12%

Table 11 shows the results of the various scenarios regarding the revenue and cost-sharing potential for Inpatient services without drugs. The Unit cost per beneficiary for each IPD admission without drugs was estimated to be US\$ 39.18 at Secondary level and US\$ 48.51 at Tertiary Level. In Scenario 1, the cost sharing price per admission is estimated to be US\$ 7.84 at Secondary level and US\$ 9.70 at tertiary level with cost recovery rate of 6%. Scenario 2, the cost sharing price per admission is estimated to be US\$ 11.75 at Secondary level and US\$ 14.55 for Tertiary Level. While in Scenario 3, the cost-sharing Price is estimated to be US\$ 15.67 for Secondary and US\$ 19.40 at tertiary level. In trying to strike a balance between affordability and cost-recovery, only scenario one presents a feasible option when juxtaposed against the affordability threshold of US\$7.

How much money will be needed to cover the costs for medicines and services at primary and secondary levels from all sources?

Essential Medicines

In order to ascertain the requirements from all sources per annum, a review of the current government allocation, estimated individual revenue from RDF sales was conducted and compared to the forecasted need in the National Health Sector Strategic Plan 2022-2026 to determine if there is any funding limitation for essential Medicines. The table 12 below provides a summary of the funding analysis;

Table 12: Resource Requirements for Essential Medicines from all Sources

Resource Analysis 2023	Required Annual Resource Requirement Based on NHSSP 2022-2026	Govt- Liberia Annual Allocation for Essential Medicines Procurement	Potential Revenue from RDF sales to Individuals	Gap/Donor Requirements
Essential Medicines and Commodities	US\$ 41.2 million	US\$3.8 million	US\$ 7.2 million	US\$30.2 million
Per Capita Requirements	US\$7.9	US\$0.7	US\$ 1.4	US\$5.8

An examination of the fiscal landscape reveals a concerning trend in government allocations towards the procurement of essential medicines. Presently, government apportions a modest US\$3.8 million, which equates to a mere 9% of the estimated annual requirement of US\$41.2 million. This glaring

discrepancy underscores the limited fiscal space and poses substantial challenges in realizing comprehensive and effective healthcare provisioning. The proposed Revolving Drug Fund (RDF) offers a notable avenue for augmenting available resources. With an estimated annual revenue of US\$7.2 million, the RDF holds the potential to contribute significantly to the financial requirements for essential medicines provision. However, it is essential to temper this potential with realism. While substantial, this revenue stream would constitute only 17% of the estimated requisite resources per annum, exposing the substantial resource gap that looms large. The pronounced resource gap of US\$30.2 million per annum presents a stark reality, necessitating external support to bridge this glaring deficit. The pivotal role of donors becomes palpable in this context, as their substantial contribution becomes imperative to achieve the national health system's ability to meet essential medicine requirements. Moreover, it is paramount to acknowledge the prerequisite of seed capital amounting to US\$25.9 million to establish the national RDF model. This additional fiscal demand, when compared against the already existing resource gap, compounds the challenge in achieving the aspirational goal of Universal Health Coverage (UHC).

Cost-sharing Model and Resource Requirements from Sources

In order to ascertain the requirements from all sources per annum for service provision without drugs, a review of the current government allocation to Counties for FY2023, estimated individual revenue from Scenario 1 of the Cost sharing Model was compared to the Calculated Total Cost of Inpatient and Outpatient Services to determine if there is any funding limitation for services. The table 13 below provides a summary of the funding analysis

Table 13: Resource Requirement for Outpatient and Inpatient Services from all Sources

Resource Analysis 2023	Total Cost of Outpatient and Inpatient Services	Govt-Liberia allocation to Counties (74% allocated to services)	Potential Revenue from Cost-sharing Scenario 1 Model	Gap/ Donor Requirements
Outpatient and Inpatient Services (Without Drugs)	US\$28.4 million	US\$5.1 million	US\$0.93 Million	US\$22.4 million
Per Capita Requirements	US\$5.5	US\$ 1	US\$ 0.2	US\$4.3

The analysis presented above underscores critical inadequacies in the prevailing funding landscape for healthcare provision. Specifically, the FY 2023 government allocation to counties, totaling US\$6,953,343, emerges as starkly insufficient in the context of delivering quality services. Notably, this allocation accounts for a mere 18% of the estimated requirement of US\$28.4 million necessary for robust service delivery. Moreover, the potential revenue generation stemming from the proposed cost-sharing model necessitates careful consideration of the population's ability to pay. The cost-sharing model for Scenario 1 is predicted to raise a relatively modest US\$0.93 million, equivalent to a mere 3% of the requisite resources. Once again, this underscores the imperative of substantial donor intervention.

In the absence of notable donor support, quantified at US\$22.4 million annually, the ramifications for healthcare facilities are profound. The incapacity to secure adequate funding impinges on their ability to provide quality health services effectively. The ramifications cascade to encompass several

detrimental consequences, including underutilization of services, diminished client satisfaction, a surge in alternative avenues for healthcare, encompassing traditional and self-treatment methods. The ultimate outcome of this funding inadequacy manifests in poor health outcomes and a surge in out-of-pocket expenditures as clients are compelled to seek healthcare from the private sector. Foremost, an increase in allocations to healthcare facilities is imperative to counteract the negative repercussions of underfunding, safeguarding the essence of Universal Health Coverage. Beyond that, substantial donor engagement is pivotal in propping up the financial architecture and fortifying healthcare delivery mechanisms.

Implementation of the Essential Universal Healthcare Package of Services

Universal Health Coverage (UHC) is a noble aspiration, but its achievement often hinges on practical considerations, such as the development of a cost-sharing program and the establishment of the Liberia Health Equity Fund (LHEF). This section provides critical considerations on how cost-sharing can be pragmatically implemented in Liberia, aligning with the principles of UHC.

- I. **Government Endorsement and Policy Framework:** Begin by securing government endorsement for the cost-sharing program and the establishment of the LHEF. This endorsement provides the necessary foundation for program legitimacy and success. Simultaneously, develop a robust policy framework that outlines the legal and regulatory basis for cost-sharing.
- II. **Formulating Co-Payment Strategies and Policy Documentation:** Engage in a comprehensive dialogue to determine the form and level of co-payments for the complementary UHC package. Prioritize measures that mitigate potential negative impacts on service access and reduce financial risk for patients. Involve stakeholders, including healthcare providers, patients, and policy experts, to ensure a balanced approach. Ensure that the RDF guidelines are revised and that cost-sharing guidelines are developed to guide implementation.
- III. **Package Design with UHC Principles:** Design the complementary UHC package in line with UHC principles. Utilize public resources to provide high-impact interventions at the primary healthcare level. Specify a comprehensive set of interventions, encompassing the 78 core interventions provided free at the point of service, and an additional 50 complementary interventions financed through the Ministry of Health's (MoH) cost-sharing program.
- IV. **Cost Estimation:** Estimate the costs associated with implementing both the core and complementary sub-packages by conducting a detailed ingredients-based costing of each of the 128 prioritized services. Ensure that the estimated cost per capita is well within the fiscal space range agreed upon for government financing of the package (in this case, US\$12-14). This step is crucial to guarantee financial feasibility.
- V. **Community Engagement and Transparency:** Engage with communities and stakeholders in transparent and open communication about the cost-sharing program. Build understanding and support by highlighting the benefits and how they align with UHC principles. Community buy-in is pivotal for program success.
- VI. **Legislation and Regulations** Draft and enact the necessary legislation or regulations that formalize the cost-sharing program and the operations of the LHEF. These legal instruments provide a solid framework for implementation, governance, and enforcement.
- VII. **Implementation Framework:** Develop a comprehensive implementation framework that clearly outlines roles and responsibilities, financial management procedures, reporting

mechanisms, and accountability measures. This framework ensures that the program operates efficiently and transparently.

- VIII. **Monitoring and Evaluation:** Establish a robust monitoring and evaluation system to continuously assess the program's progress and impact. Regularly review its effectiveness and make adjustments as needed to enhance service delivery and financial sustainability.
- IX. **Capacity Building:** Invest in capacity building for healthcare providers, administrators, and other stakeholders involved in the program. Ensure that they are well-equipped with the necessary skills and knowledge to manage cost-sharing and RDF effectively and transparently.

Practical implementation of RDF and cost-sharing for UHC in Liberia is achievable through careful planning and stakeholder engagement. By following this step-by-step roadmap, the government can develop a sustainable RDF and cost-sharing program that aligns with UHC principles, improves healthcare access, and reduces financial risk for the population. This comprehensive approach paves the way for equitable and accessible healthcare for all Liberians.

Health System Impact of the Revolving Drug Fund and Cost-sharing Mechanism

The introduction of a Revolving Drug Fund (RDF) and a cost-sharing mechanism in the healthcare landscape holds substantial implications for health system dynamics, patient outcomes, and access to essential services. Drawing insights from various empirical studies and evaluative frameworks, this section expounds upon the multifaceted impact of these interventions on the Liberian health system.

- I. **Enhanced Drug Availability and Accessibility:** Evidence gleaned from a study evaluating the impact of an RDF in Khartoum state of Sudan revealed a significant improvement in medicine availability. In RDF facilities, the average availability rate of key items stood at 93%, compared to 86% in non-RDF facilities. The RDF model displayed a commendable track record, with medicines consistently available at rates ranging from 95% to 100% over a year.⁽⁴⁰⁻⁴²⁾ This underscores the RDF's potential to alleviate stockouts of essential medicines, ensuring timely treatment and improved patient outcomes. A functional RDF in Liberia could help to address the persistent challenge of drug shortages, thereby bolstering the quality of healthcare services rendered.
- II. **Positive Health Systems Impact:** The introduction of an RDF and cost-sharing mechanism can generate positive health systems impact by enhancing the availability, affordability, and utilization of medicines and services. Access to affordable medications can positively impact healthcare delivery, leading to more effective disease management and better patient outcomes. This, in turn, can alleviate the burden on healthcare facilities and professionals. For patients, the availability of subsidized medications through an RDF can alleviate the financial burden associated with purchasing expensive drugs out-of-pocket. This may lead to increased compliance with treatment regimens and better health-seeking behavior. The RDF's ability to curtail stockouts not only facilitates timely treatment but also contributes to overall health system efficiency. Patients' increased access to medicines augments health outcomes, thereby potentially reducing healthcare costs and amplifying patient satisfaction. (27, 34, 35)

Examples drawn from the RDF in Sudan show that the benefits of RDF are most marked in rural areas, which suffered from greater drug supply problems in the past (the private sector

was less developed there) and which now benefit from the "one price" policy of the RDF (drugs cost the same throughout the RDF network, no matter how remote the facility). In ensuring a reliable and relatively affordable drug supply, the RDF has contributed to revitalizing the primary care system.(42)

At the same time, the RDF in Sudan is based on a strict cost-recovery mechanism, which has no built-in exemptions for those who are unable to pay. It is unable to square the circle of low incomes and high burden of illness, which lead to exclusion and financial hardship for around one fifth of the population. Revolving Drug funds, at their best, can improve availability and relative affordability, but in areas with high levels of absolute poverty, they cannot ensure access for all without external support. This is particularly true where cost recovery is applied not just to drugs, but to all health care services, as is the case in Liberia.(42)

- III. **Affordability and Healthcare Delivery:** The affordability of medications through an RDF holds promise in enhancing healthcare delivery. Subsidized medications could potentially lead to more effective disease management, improving patient outcomes, and subsequently easing the burden on healthcare facilities and professionals. This augmentation in healthcare delivery can be instrumental in achieving the goals of Universal Health Coverage (UHC) by rendering quality services accessible to a broader population.
- IV. **Financial Barriers and Viability:** The viability of the RDF hinges on effective management, transparent financial practices, and robust community engagement. A functioning supply chain management system and strong governance are prerequisites for a successful RDF implementation. Learning from Sudan's experience, the engagement of community health workers and the establishment of local drug committees were instrumental in ensuring proper selection and pricing of essential medicines. Regular audits and monitoring systems bolstered transparency and sustainability. The viability of cost-sharing hinges on careful design to avoid financial barriers for vulnerable populations. Well-designed exemption mechanisms for the indigent and vulnerable populations are essential to ensure equity. Monitoring and evaluation systems are critical to track the impact of cost-sharing on healthcare utilization and identify unintended consequences.(34, 40-42)
- V. **Equity and Exemptions:** In the context of cost-sharing, designing mechanisms to avert financial barriers for vulnerable populations is paramount. A well-structured exemption framework is vital to ensure equitable access to healthcare services. Experiences from Ghana underscore the significance of exemption mechanisms in safeguarding the interests of low-income and vulnerable populations. (42)
- VI. **Balancing Access and Cost Sharing:** A systematic review on cost-sharing concluded that while measures may offer revenue generation potential and reduction in overconsumption, careful balance is required to prevent potential deterrents for patients, particularly those belonging to economically disadvantaged strata. Cost-sharing can lead to patients foregoing essential medications and to decline in health status .(43)

Several studies have identified Improved access to healthcare as a result of reduction in out-of-pocket expenditure as a possible causal pathway for improved health. Reduced user charges were associated with improved health outcomes, particularly for lower-income groups and children in LMICs.(31, 43, 44) Accelerating progress towards universal health coverage through prepayment mechanisms such as taxation and insurance can lead to improved health outcomes and reduced health inequalities in LMICs. These findings highlight the importance of moving away from user charges to finance UHC, and

towards contributory schemes based on prepayment through taxation and insurance contributions with large-scale risk pools that enable cross-subsidization from the healthy and wealthy to the sick and low-income groups. This evidences the importance of public finance for subsidizing the costs of healthcare for low-income and disadvantaged populations, and as an effective policy lever to reduce inequities in access and improve health outcomes. While all stand to benefit from enhanced financial protection brought about by greater reliance on prepayment and cross-subsidization, the lowest-income and less healthy populations will benefit most, as these groups are more likely to face financial hardship due to ill health. Replacing user charges with public funding or a prepayment model for these disadvantaged populations should help to reduce financial barriers to accessing care, in turn, improving health outcomes for these groups and promoting equity in health.(31, 44)

In light of this well-established evidence on the need to move towards prepayment mechanism, an analysis was conducted to establish the amount each Household would need to pay for a viable decentralized RDF scheme. In this model, each facility would set up its own RDF management committee and collect funds on a monthly basis from each Household in its catchment area, the drugs would be procured from identified and approved vendors on monthly basis, the drugs would then be provided to registered members of this prepayment scheme as they present for services at the facility. As this model would be managed in a decentralized manner, the pipeline would be reduced to 2 months to allow for collections and procurement of a month’s worth of medication.

Table 14: Prepayment Model Household Contribution Requirement

Item	Value
Pipeline months	2
Population	5,248,621
OPD utilization rate	0.8
Average number of OPD visits per month	349,908
Average Number of Items prescribed per visit	3
Average Cost of each Item prescribed based on STG US\$	\$ 1.78
TOTAL SEED CAPITAL REQUIRED US\$	\$ 3,736,560
Seed Capital Per Capita Requirement	\$ 0.71
Household Seed Capital requirement per month	\$ 2.85

The above analysis (Table 14) shows that the Seed capital requirements per capita would be US\$0.71 for the prepayment RDF model. As each Household has an average of 4 persons, each household in the catchment population would need to pay US\$2.85 per month. The analysis reveals that the monthly financial commitment of US\$2.85 per household for the prepayment RDF model is not only manageable when compared to the threshold of US\$7 per month but also falls below the estimated annual OOP expenditure on drugs for households. Specifically, this annual expenditure amounts to US\$84 for outpatient care, encompassing consultations, examination fees, and prescribed medicines. In addition, households allocate an estimated US\$29 annually for non-prescribed medicines and supplies.(18, 22)

This alignment between the financial commitment required for the prepayment RDF model and the existing expenditure patterns of households elucidates the feasibility of the proposed approach. By establishing a direct correlation between financial requirements and the prevailing financial capacities of households, the prepayment RDF model emerges as a pragmatic avenue for augmenting healthcare

financing while simultaneously ensuring equitable access to essential medicines and healthcare services.

Recommendations

For Liberia to fully benefit from the RDF scheme, it must be adopted as a health system reform approach that addresses service delivery, drug supply, financing, and management in an integrated and coherent way.

1. Strong governance and Leadership

The successful implementation of Revolving Drug Fund (RDF) and cost-sharing mechanisms hinges on robust governance and effective leadership. It is recommended that multidisciplinary committees are established at various levels of the health system, namely the Ministry of Health (MoH), county, and facility/community levels, to ensure the efficacy and integrity of these interventions.

a. Ministry of Health (MoH) RDF and Cost sharing Committee

At the pinnacle of the governance structure, the MoH committee assumes a pivotal role in steering policy direction, regulatory oversight, and operational guidelines for RDF and cost-sharing mechanisms. The committee's multifaceted responsibilities should encompass areas such as procurement guidelines, capacity-building programs, financial and audit oversight, and the preparation/revision of medicine lists. To ensure comprehensive representation and expertise, committee membership should encompass stakeholders from various units within the MoH, including the Policy and Planning Unit, Procurement and Supply Chain Unit, Central Medical Stores, Curative Services, Liberia Medicines and Health Products Regulatory Authority (LMHRA), and the finance and audit units.

b. County-Level RDF and Cost-sharing Committee

Parallel to the MoH committee, a similar governance structure should be replicated at the county level. This committee should incorporate representatives from the County Health Team and the County depot. By including local stakeholders, the committee is well-equipped to tailor interventions to the specific needs and nuances of the respective county, while also ensuring alignment with national policies and guidelines.

c. Health Facility/Community Committee

At the grassroots level, the facility/community committee plays a critical role in the successful implementation of RDF and cost-sharing mechanisms. This committee should consist of members from the facility management team who possess expertise in finance, procurement, clinical care and pharmaceutical management. Additionally, community representatives should be actively involved to ensure that interventions resonate with the needs and preferences of the local population. This inclusive approach bolsters community engagement and buy-in, fostering a sense of ownership and collaboration.

2. Pharmaceutical Inclusion Criteria

A paramount responsibility of these committees is to uphold the integrity of the RDF by meticulously selecting the pharmaceuticals included. Only medications listed in the National Essential Medicines List, characterized by proven efficacy, safety, and sourcing from trusted vendors, should be integrated into the RDF. This practice ensures that patient health and safety remain at the forefront of decision-making and that the RDF functions as a reliable source of quality medicines. The Liberia Medicines and Health Products Regulatory Authority (LMHRA) will have to play a crucial role in regulatory oversight

to ensure that only trusted vendors are selected to participate in the RDF and also ensure that a robust pharmacovigilance is established at all levels.

3. Operational Guidelines and Training Materials

The seamless and coordinated functioning of Revolving Drug Fund (RDF) and cost-sharing mechanisms relies heavily on the establishment of comprehensive operational guidelines and training materials.

a. Importance of Operational Guidelines

Operational guidelines provide a structured framework that outlines the step-by-step processes, roles, responsibilities, and procedures associated with the functioning of the RDF and cost-sharing mechanisms. These guidelines serve as a reference point for all stakeholders, promoting consistent and harmonized operations across various levels of the health system. By defining clear processes for the identification and enrollment process for vulnerable individuals eligible for exemption from cost-sharing requirements, drug procurement, storage, distribution, fee collection, exemptions, reporting, and auditing, operational guidelines ensure that the interventions are executed with precision, transparency, and accountability. The heterogeneous origins and operational mechanisms of existing RDFs underscore the significance of standardization through operational guidelines. By establishing a unified framework, RDFs can limit individual variations and operate cohesively to contribute to PHC coverage in Liberia. The harmonization of operational procedures ensures consistency in practices, facilitates cross-learning between facilities and counties, and streamlines reporting and evaluation processes. This standardization is especially vital in the context of Liberia, where a fragmented approach could hinder the realization of a comprehensive and efficient healthcare delivery system.(34, 41, 42, 45)

4. Capacity Building through Training Materials

The successful execution of RDF and cost-sharing mechanisms necessitates the development and dissemination of comprehensive training materials. These materials cater to the diverse needs of stakeholders, equipping them with the knowledge and skills required for effective implementation. Training materials encompass a range of topics, including the rationale behind the interventions, operational procedures, financial management, reporting mechanisms, and community engagement strategies. Training materials are instrumental in fostering a shared understanding among stakeholders and building their capacity to navigate the complexities of RDF and cost-sharing operations.(35, 42)

5. Substantial investment

The establishment of a Revolving Drug Fund (RDF) at a national level represents a pivotal initiative that requires a substantial investment of US\$ 26 million for the procurement of capital seed stock of essential medicines. This financial commitment is indispensable to create a sustainable and functional RDF that can address the persistent challenges of drug availability and affordability in the healthcare landscape. However, the substantial nature of this investment necessitates strategic engagement with key stakeholders, including the Ministry of Finance and potential donors, considering the government's limited fiscal space for additional financing. For the Decentralized Model, Potential Sources of seed capital include funds earned from Performance Based Financing reimbursements, Households contributions at US\$2.85 each and GoL Treasury allocation. Donors would provide support for drugs for vulnerable members of community and those drugs would not be sold. This investment lays the groundwork for the RDF's ability to operate independently, generating revenue through cost-sharing mechanisms and replenishing the drug stock as part of a self-sustaining cycle. While the upfront investment might seem substantial, the long-term benefits of a functional RDF are many.

Improved drug availability and affordability contribute to better healthcare delivery, reduced disease burden, and enhanced health outcomes. The RDF's revenue-generating mechanisms, such as cost-sharing, create a self-sustaining model that can eventually alleviate the burden on government resources for drug procurement. By investing in the RDF now, Liberia can pave the way for a more resilient and efficient healthcare system in the future.

6. Regulatory reform

The absence of a regulatory oversight framework and medicine pricing policy in Liberia's healthcare landscape has unveiled a significant vulnerability, exposing patients to various market dynamics and disparities in the pricing of medicines across the public and private sectors. At present, Liberia grapples with a regulatory vacuum that leaves the pricing of medicines susceptible to unregulated market forces.⁽²⁵⁾ The absence of standardized medicine pricing policies accentuates variations in medicine costs within both the public and private sectors. This situation not only hampers equitable access to essential medications but would also place undue stress on initiatives like the RDF, which relies on maintaining affordable drug prices to ensure its viability. To address this regulatory void, it is recommended that the Liberia Medicines and Health Products Regulatory Authority (LMHRA) be provided with comprehensive legal authority to institute a robust regulatory framework. This framework should encompass the establishment of reference pricing, mark-up regulations, and reimbursement price policies for drugs, applicable to both the public and private sectors. The LMHRA's enhanced regulatory role would ensure that the prices of essential medications remain transparent, reasonable, and uniform across all healthcare settings. The RDF, if devoid of regulatory support, could become a passive recipient of market-driven pricing dynamics. This vulnerability might result in exorbitant mark-ups that undermine the RDF's sustainability and financial viability. Regulatory reforms that establish price ceilings, reference pricing mechanisms, and reimbursement policies act as safeguarding mechanisms to prevent such exploitative pricing practices. By establishing a transparent and standardized pricing framework, regulatory reforms reinforce the RDF's capacity to negotiate procurement prices that are both economically feasible and aligned with the interests of healthcare accessibility.

7. Crucial Financial Management Frameworks

The establishment of effective financial management systems is an essential pillar for ensuring the accountability and transparency of the Revolving Drug Fund (RDF) and cost-sharing mechanisms. This encompasses robust monitoring, evaluation, stock keeping and tracking mechanisms to mitigate the risk of corruption and promote responsible fund utilization. To ensure the integrity of the RDF and cost-sharing initiatives, it is paramount to establish comprehensive financial management systems that encompass monthly audit mechanisms. These mechanisms are designed to reconcile cash inflows with the recorded value of sales made. Concurrently, in-depth analysis of sales patterns is vital, delving into the revenue generated by different drugs and services. This scrutiny is instrumental in identifying trends, inefficiencies, and potential areas for improvement within the system. The integration of monitoring and evaluation systems complements financial management, offering a holistic view of the initiatives' performance and enabling informed decision-making.^(34, 35, 41, 42, 46, 47) Stakeholders' concerns about accountability and transparency are not unfounded. The potential susceptibility of funds to corruption underscores the urgent need for rigorous financial oversight. Without effective systems and vigilant supervision, the initiatives can be vulnerable to misuse or misappropriation of funds.

Various countries have adopted innovative strategies to address the risks associated with fund mismanagement.(40-42) Some have implemented measures to deduct amounts from staff salaries in cases where audits of drug sales reveal unexplained variations in financial status that do not correspond with inventory. This approach serves as a deterrent against irregular financial practices and underscores the gravity of maintaining financial integrity. The implementation of track and trace systems offers a powerful tool for mitigating financial risks and ensuring accountability. These systems enable the comprehensive tracking of each prescription, from the clinician's name to the patient's name, the quantity of drugs issued, and subsequent sales. Such a robust monitoring mechanism enables the identification of potential irregularities, including irrational use of medicines, over-prescription, and overuse. RDF committees can use these insights to engage facilities and clinicians, rectifying discrepancies and ensuring that fund utilization aligns with established guidelines.(40-42)

8. Financial Independence

This is crucial to the survival and success of the RDF. High level political support has helped to ensure that to date its funds have not been diverted to other uses.(42) Political commitment allowed the RDF to have a separate account so that its managers have a free hand in keeping generated revenues out of public treasury regulation. Therefore, one of the important lessons to be learned from the RDF in Khartoum state is that revenues generated from medicine sales should be kept in the RDF and entirely excluded from the Ministry of Finance PFM cycle. The RDF also enjoys the benefits of a strong political commitment in terms of tax exemption and import license exemption.(41)

9. Enhancing Health Literacy

Health literacy constitutes a fundamental determinant of healthcare access, utilization, and outcomes. The successful implementation of healthcare initiatives, such as the Revolving Drug Fund (RDF) and cost-sharing mechanisms, heavily relies on an informed and empowered population. By providing accessible and comprehensible information, health education programs empower individuals to make informed decisions about healthcare utilization and financial participation. These programs can encompass diverse formats, ranging from community workshops and informational pamphlets to digital platforms and interactive sessions. The success of RDF and cost-sharing initiatives hinges on the collective commitment of diverse stakeholders. The buy-in and support of various stakeholders, including the government, healthcare providers, pharmaceutical companies, and community representatives, are crucial for the successful reintroduction of an RDF and cost sharing mechanism. Governmental bodies play a vital role in providing policy direction, regulatory oversight, and financial support. Healthcare providers serve as intermediaries between healthcare systems and communities, making their support pivotal in communicating the benefits and modalities of RDF and cost-sharing. Pharmaceutical companies, as key contributors to the availability of medicines, are integral in ensuring affordable pricing and reliable drug supply. Community representatives, reflecting the grassroots perspective, can facilitate the dissemination of information and garner local support.

10. Advocacy Plan

To build confidence, it is recommended to start on the focus area of essential medicines and use the main tool of an advocacy plan as an outward facing mechanism. The main principle to build trust is to be transparent by sharing information at all times. The main target audiences and general objectives recommended are: (a) a target audience of the general public with the objective to show what will be different in the short term; the example recommended is stabilizing the availability of essential medicines, (b) a target audience of the general public, donors and suppliers of essential medicines with the objective of sharing technical data on the delivery of essential medicines to the last mile (c)

a target audience of potential new and existing stakeholders with the objective of mobilizing resources from MoF and Donors and (d) a target audience of the general public and suppliers with the objective of setting up a billing, sales and complaints mechanism for essential medicines. Donors have indicated that a rebranded RDF as **Drug Basket Fund** in which funds would be protected for vulnerable populations and that drugs bought by donors would not be sold would be supported. Seed capital for drugs that would be sold would be raised by funds raised from performance-based financing program, GoL treasury and households at US\$2.85 each directly by the RDF committees in those communities. It is recommended that the advocacy plan be prepared by a joint effort between MOH and communications specialists. The priority is to have data to assure stakeholders that their funds are tied to an actual delivery of product (i.e., time and place), as a means of building confidence that their funds lead to results.

Three (3) Year Implementation Road Map for the Revolving Drug Fund and Cost- Sharing Mechanism First (1st) Phase of Implementation – September 2023 to July 2024

It is recommended that this phase focuses on implementing the cost-sharing mechanisms and new RDF as a new approach for management of supplies of medicine with a focus on essential medicines for public clinics, Health centers and hospitals, with the objective of building transparency, accountability, institutional and confidence of all stakeholders. The various RDF committees must be established and Seed capital should be secured without fail in this period as a starting point. Sources of seed capital include funds earned from PBF reimbursements, Households and GoL. Donors would provide support for drugs for vulnerable members of community and those drugs would not be sold. Eligible facilities would be identified from an assessment exercise and participating staff and community representatives trained. Authority would need to be granted for facilities to open separate accounts to manage the funds realized from the sales. The common goal would be reaching at least 85% drug availability of essential tracer medication in participating facilities.

Second (2nd) Phase of Implementation - Aug 2024 to July 2025

- Expand implementation to additional drug budget lines, with priority on Non-Communicable Diseases (NCDs) including Cancer, Mental health, Surgical and Trauma Commodities
- Prepare a concept note to unify revolving fund with other Donor procurements for ARVs, TB, Malaria, RH, Family Planning, Immunization
- Establish the Liberia Health Equity fund as separate legal entity with contributory rate set to cover cost-sharing aspects of RDF and Services in the benefit Package. Reimbursements into RDF will be made on each successful claim made by the facility.

Third (3rd) Phase of Implementation - Aug 2026 to July 2027

- Implement a plan to unify Liberia Health Equity Fund and RDF into one Legal entity
- Finalize a MOU between LHEF, LMHRA, CMS, MoH for next 3 years of implementation

Detailed One (1) Year Roadmap – Phase I

No.	Action Points	Inputs & Cost driver	Lead & Support Units	Timeline
1	Disseminate the National Health Policy and other strategic documents to popularize the transitioning from universal free health policy to targeted free care & cost sharing to support implementation of essential package for universal health coverage including cost sharing (Abolition of Universal Free Health Care)	Print cost of the policy and strategic document, money for cascaded dissemination meetings at all levels of the health sector including all stakeholders	PPU, GDU, CHS, NMU	October to November 2023
2	Rebrand RDF (Drug Basket) to make it marketable to the donors and update manual to address changes and operational issues includes, financial management, Accountability, Procurement, Reporting etc.	Consultations meeting to agree on new name, TA Cost, and meetings to review, update and validate operational manual	HFU, PPU, PBF,	November 2023
3	Develop Cost Sharing Manual to guide uniformed implementation of cost sharing across all secondary and tertiary health facilities	TA Cost, Logistics, venues, feedings technical meeting to develop/ draft manuals, and meetings to validate operational manual	HFU, PPU, PBF,	November 2023 to January 2024
4	Come up with a clear timeline to start the implementation of the Drug Basket (RDF) and Cost Sharing	Meeting with minister to agree on start date for Drugs Basket Fund and cost sharing	PPD-HFU	January 15, 2024
5	Review essential drug list to align with EUHC Core and Complementary Packages	Meeting to review and revise essential drugs list for levels of care	CSD-PS	January 2024
6	Mobilizing Seed Fund from the community, work with PBF facilities. PBF to use a share of their bonus as seed fund to start Drugs Basket Fund at facility level.	Logistics for local travels, DSA, venues, feedings for engagement meetings with community leaders, PBF facilities & HFDC and meet MFDP to include the seed fund on the 2024 budget.	HFU, PPU, OFM PBF,	January 2024

No.	Action Points	Inputs & Cost driver	Lead & Support Units	Timeline
7	Work with the MFDP and Legislature through the budget process to secure funding for Drugs Basket Fund (RDF) and prioritize PHC facilities on the 2024 budget	Venue and feeding for advocacy meeting with legislature through the Health Committee	Minister, AMP	October 2023 to December 2023
8	The MOH need to be clear abouts its approach while ensuring that the poor households for which the donors are supporting the sector are protected; when this is well packaged and presented to the donors it will prove that the government is also committed to providing health care services;	Meetings to clarify exempted population and clearly layout their identification criteria and how they can be catered for or supported by donor partners	PPU, HFU,	November 2023
9	In line with the health policy, start with community resources, PBF Earnings and Government budget to capitalize the Drugs Basket Fund, learning from existing experience	Logistics to facilitate local travels, DSA, venues, feedings for engagement meetings local leaders, health facilities and communities to facilitate engagement	HFU, PPU, OFM PBF, DGU	January 2024
10	Organize stakeholder meeting to get donors commitment and contribution towards the Drug Basket Fund	Venue, feeding and logistics	AMP, DMP, Minister	November 2023 to January 2024
11	Train CHT and DHT, County and District Health Board, facilities staff and HFDC members on Drugs Basket and Cost Sharing	Venues in all counties, districts, logistics, feedings, materials & DSA	HFU, GDU, PS, PBF, OFM, Procurement	February to March 2024
12	Community engagement and Advocacy to create awareness around Drug Basket Fund and LHEF	Venues in all counties, districts, logistics, feedings, training materials and DSA	GDU, CHP, PS	February to March 2024
13	Identify and sign framework agreement with local vendors to participate in the Drug Basket Fund	Logistics & DSA for County assessment and prequalification	CHTs/Pharmacist, DHT, MDs & OICs	January 2024
14	Use phased approach to prioritize primary health facilities starting with those far to reach facilities for the implementation of Drug Basket Fund, based on clear criteria	Meeting to develop and sequence list of priority primary health care facilities working with CHTs	HFU, AMP, AMCS	January to March 2024

No.	Action Points	Inputs & Cost driver	Lead & Support Units	Timeline
15	Establish a clear timeline for the implementation Drugs Basket Fund and Cost sharing mechanism	SMT meeting	Minister	November 2023
LHEF				
16	Work with donors and stakeholders to visit next country to conclude study visit on health insurance	Work with World Bank and USAID on financial request and logistics for final leg of health insurance study visit	HFU, AMP	November 2023 to January 2024
17	Update LHEF Bill to incorporate lesson learned from study tour and elsewhere	Venue and feeding for few days meeting to review and update LHEF Bill	HFU, OGC & PPU	January 2024
18	Engage key Cabinet Members- MFDP, Gender, Education, Internal Affairs, Youth and sports, Agricultural and Commerce to support the bill	Venue, feedings, DSA and logistics for advocacy meetings	Minister, AMP, HFU	January 2024 to March 2024
19	Advocacy with Civil Society organizations to get their buy-in on the LHEF Bill	Venue, feedings, DSA and logistics for advocacy meetings	GDU, HFU, PPU	March to April 2024
20	Submit the LHEF Bill to cabinet review and endorsement	Work with Director of Cabinet and the President for passage into law.	OGC, AMP, Minister	May 2024
21	Work with the President Office RL to submit the bill to the Legislature	Minister's time and efforts	OGC, AMP, Minister	May- June 2024
22	Conduct a detailed ingredient-based costing for the 128 EUHC Package	Consultant cost, venue, logistics and DSA for technical working session and meetings	HFU	January to July 2024
23	Develop and enforce referral Guidelines between the level of care (Primary, Secondary and tertiary level)	Venue, DSA, logistics for technical and validation meetings	PPU, QMU & NMU	July 2024
24	Conduct Health Actuarial study to support the LHEF implementation (Donor)	Consultant cost, DSA and logistics for technical meetings, field visits and validation	HFU	March to July 2024
25	Develop policy brief on institution arrangement for LHEF	Staff time and consultation	PPU, HFU	March to June 2024

Conclusion

The reintroduction of a revolving drug fund (RDF) and Cost-sharing Mechanisms in Liberia holds the promise of addressing critical medication access challenges, enhancing healthcare delivery, and positively influencing the overall health system. This report's comprehensive assessment of feasibility, revenue potential, and health system impact equips policymakers with the necessary insights to make informed decisions in advancing this initiative. It is imperative that collaborative efforts between the government, private sector, and international partners are leveraged to ensure the sustainability and success of the RDF in Liberia.

In summation, the revival of the Revolving Drug Fund (RDF) within primary health facilities and the implementation of cost-sharing at secondary level facilities within Liberia's public sector present opportunities for revenue generation and health system enhancement. The RDF, adeptly managed, exhibits the potential to amplify the availability and sustainability of essential medicines in primary care settings. However, this potential materializes with the establishment of strong governance structures, transparent financial practices, and active community engagement. On the other hand, the implementation of cost-sharing strategies bears the capacity to augment revenue streams, but it necessitates meticulous design accompanied by robust exemption mechanisms to ensure equitably distributed healthcare access and to mitigate potential negative repercussions on vulnerable demographic segments. The synthesis of meticulously formulated, evidence-based recommendations stand poised to optimize the revenue generation capabilities and health systems influence of these financial strategies, ultimately contributing to the fortification of Liberia's healthcare financing ecosystem.

The significance of the proposed Revolving Drug Fund (RDF) and cost-sharing mechanisms cannot be overstated. These interventions represent transitional and pivotal steps toward the augmentation of healthcare accessibility, the improvement of service quality, and the enhancement of health outcomes within Liberia. By addressing the critical issues of medication availability and affordability, these strategies hold the potential to bolster the foundational elements of Liberia's healthcare system, positioning it for greater resilience and effectiveness. It is envisioned that the RDF and Cost-sharing mechanisms will be merged in the Liberia Health Equity Fund on its establishment as a more robust mechanism for financial protection, resource mobilization and enhancement of access to cost-effective interventions outlined in the Essential Package of Health Services (EPHSII).

One resounding implication emerging from this analysis is the undeniable importance of adequate funding for the realization of Universal Health Coverage (UHC). The RDF and cost-sharing mechanisms would only be able to complement resource requirements with substantial requirements still required from donors to not only enhance effective coverage of healthcare services but also to generate the necessary revenue to support a comprehensive UHC framework. By ensuring equitable access to essential medications and healthcare services, these financing strategies contribute significantly to the achievement of UHC, a goal that remains central to sustainable development and societal well-being.

In closing, the careful consideration and implementation of the Revolving Drug Fund and cost-sharing mechanisms in Liberia have the potential to redefine the landscape of healthcare access, delivery, and financing. As Liberia forges ahead, these proposed strategies should be embraced and fine-tuned, with collaboration and strategic partnerships at their core, to forge a path towards a healthier and more equitable future for all citizens.

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Annex 1: Procurement Prices of Essential Medicines

MoH Essential Health Product List 2023					
SN	Medicines	Unit	Unit Price (US\$)	Adjusted Unit Price for Insurance, freight and delivery to CMS (US\$)	Adjusted for Insurance and losses (Health Facility) (US\$)
1	Aminophylline 250mg/10ml	1 Amp	2.50	3.00	4.03
2	Amlodipine 10mg	Tab	0.04	0.05	0.06
3	Amlodipine 5mg	Tab	0.03	0.04	0.05
4	Amoxicillin 125mg/5ml Btl	Btl	0.01	0.01	0.01
5	Amoxicillin 250 mg	tab	0.02	0.02	0.03
6	Aluminium Hydroxide 500 mg	tab	0.01	0.01	0.01
7	Amoxicillin 250mg Dispersible	tab	0.03	0.03	0.04
8	Amoxicillin 250mg/5ml	btl	0.70	0.84	1.13
9	Amoxicillin 500mg	tab	0.04	0.05	0.06
10	Ampicillin 1g Pwd For Injection	Vial	0.24	0.29	0.39
11	Ampicillin 500mg Pwd For Injection	Vial	0.20	0.24	0.32
12	Anti-snake Serum 30mL	Vial	60.00	72.00	96.60
13	Ascorbic Acid 250mg	tabs	0.02	0.02	0.03
14	Atenolol 100mg Tabs	tabs	0.17	0.20	0.27
15	Atenolol 50mg Tabs	tabs	0.15	0.18	0.24
16	Atropine Sulphate 0.4mg/mL inj.	amp	0.60	0.72	0.97
17	Azithromycin USP 500mg	tab	0.25	0.30	0.40

18	Benzylthinepenicillin 1.2 MIU	vial	0.36	0.43	0.58
19	Benzylthinepenicillin 2.4 MIU	Vial	0.40	0.48	0.64
20	Bupivacaine HCl 0.25%/W/V ,30mg/mL	Vial	3.00	3.60	4.83
23	Ceftriaxon 1 g, powder for injection	Vial	0.60	0.72	0.97
24	Cetirizine Hydrochloride 5mg/5ml	Btl	0.60	0.72	0.97
25	Chlorphenamine (Piriton)Maleate 4mg	Tab	0.04	0.04	0.06
26	Chlorpromazine 100mg	Tab	0.06	0.07	0.10
27	Ciprofloxacin 2mg/mL,100mL Infusion bag	Bag	0.35	0.42	0.56
28	Clotrimazole 1% w/w, Betamethasone Dipropionate 0.05% w/w, Neomycin Sulfate 0.5% w/w	tube	0.60	0.72	0.97
29	Cloxacillin 500mg,pdr for injection vials	vial	0.44	0.53	0.71
30	Co-trimoxazole (Septrin) 400 mg + 80 mg	Tab	0.02	0.02	0.03
31	Co-trimoxazole (Septrin)120 mg + 40 mg	Tab	0.02	0.02	0.02
32	Cyproheptadine multivitamin	Btl	1.00	1.20	1.61
33	Dexamethasone sodium phosphate 5 mg/ml, 1 ml, inj.	Amp	0.08	0.10	0.13
34	Dextromethorphan Hydrobromide 10mg & Phenylephrine 5mg	btl	1.00	1.20	1.61
35	Dextromethorphan Hydrobromide 5mg & Chlorpheniramine Maleate 1mg	btl	1.00	1.20	1.61
36	Diazepam 5mg	Tab	0.03	0.04	0.05
37	Diclofenac 75mg Sustained Release	Tab	0.10	0.12	0.16
38	Diclofenac Diethylamine	vial	0.60	0.72	0.97
39	Diclofenac Sodium 50mg	tab	0.01	0.01	0.02
40	Diphenhydraminine 12.5mg Ammonium Chloride 125mg	btl	1.50	1.80	2.42
41	Doxycycline 100 mg (as Hyclate)	Tab	0.03	0.04	0.05

42	Emergency Contraceptive Levonorgestrel 0.75mg Tab, 2 Tabs	Tab	1.30	1.56	2.09
43	Erythromycin 250mg	Tab	0.05	0.05	0.07
44	Ferrous Sulphate 200mg,Folic Acid	Tabs	0.00	0.00	0.01
45	Flucloxacillin 125mg/5ml	btl	2.20	2.64	3.54
46	Flucloxacillin 250mg	tab	0.08	0.10	0.13
47	Fluconazole 200mg	Cap	0.10	0.12	0.16
48	Fluoxetine 20mg	Tab	0.40	0.48	0.64
49	Folic Acid 5mg	Tab	0.00	0.00	0.00
50	Glibenclamide 5mg	Tab	0.02	0.02	0.02
51	Glycerol 0.75ml	Btl	6.00	7.20	9.66
52	Guaiphenesin 50mg &Chlorpheniramine Maleate 1mg	btl	2.00	2.40	3.22
53	Guaphenesin 100mg/5ml	Btl	1.70	2.04	2.74
54	Haloperidol 5mg	Amp	3.00	3.60	4.83
55	Hydrochlorothiazide 12.5 mg	Tab	0.07	0.08	0.11
56	Ibuprofen 100mg/5ml	btl	0.50	0.60	0.81
57	Ibuprofen 400mg	Tab	0.02	0.02	0.02
58	Iron (III) Polymaltose & Folic Acid	Tab	0.01	0.01	0.02
60	Jadelle Levonorgestrel 75mg/rod, 2 rod Implant, 1 set	Set	20.00	24.00	32.20
61	Ketamine 50 mg/ml, 10 mL, for injection	Vial	4.80	5.76	7.73
62	Lidocaine HCl 2% 20 mL, for injection	Vial	1.50	1.80	2.42
64	Lisinopril 5mg	Tabs	0.03	0.04	0.05
65	Loperamide HCl 2mg	Tab	0.01	0.01	0.02
66	Mebendazole 100mg	Tab	0.02	0.02	0.03
67	Metformin Hydrochloride 500mg	Tab	0.02	0.02	0.03
68	Methyldopa 250mg	Tab	0.10	0.12	0.16
69	Metoclopramide HCl 10 mg/2 mL (5mg/mL), for injection	Amp	0.10	0.12	0.16
70	Metoclopramide Hcl 10mg Tab	Tab	0.02	0.02	0.02
71	Metronidazole 100mg/mL injection	Btl	0.33	0.40	0.53

72	Metronidazole 125mg/5ml	Btl	0.50	0.60	0.81
73	Metronidazole 250mg	Tab	0.01	0.01	0.02
74	Multivitamin/iron, folic acid	btl	0.80	0.96	1.29
75	Nalidixic acid 500 mg	Tab	0.01	0.01	0.01
76	Nystatin 100.000 iu/ml oral suspension, 30 ml	Pc	0.80	0.96	1.29
77	Nystatin 1000 IU supp	Btl	0.05	0.06	0.08
78	Omeprazole 20mg	Tab	0.01	0.01	0.01
79	Paracetamol 100mg	Tab	0.00	0.01	0.01
80	Paracetamol 125mg/5ml	Btl	0.86	1.03	1.38
81	Paracetamol 500mg	Tab	0.01	0.01	0.01
82	Pentazocine 30mg In 10ml Amps	Vial	0.95	1.14	1.53
83	Phenobarbital	Vial	3.20	3.84	5.15
84	Phenoxymethylpenicillin 250mg	Tab	0.02	0.03	0.04
85	Phenylephrine 2.5mg Paracetamol 125mg Chlorpheniramine Maleate 1mg	btl	2.00	2.40	3.22
86	Phenylephrine 5mg BP & Chlorpheniramine Maleate 4mg BP	Tab	0.15	0.18	0.24
87	Propranolol 40mg	Tab	0.01	0.01	0.02
88	Rifampicin	Tab	0.10	0.12	0.16
89	silver sulfadiazine 1% cream, 50 g tube	tube	1.00	1.20	1.61
90	Sayana DMPA 104mg/0.65mL, Pre-Fill Uniject, 1 Syringe,, amp	Pc	10.00	12.00	16.10
	Salbutamol inhaler	Pc	1.71	2.05	2.75
91	Sulfamethoxazole +Trelmethoprine 480mg	Tab	0.02	0.02	0.03
92	Sulfamethoxazole 200mg + Trimethoprim 40mg	Btl	1.10	1.32	1.77
93	Tetracyclin 1% Eye Ointment	Tube	1.04	1.25	1.68
94	Vitamin B Compound	Tab	0.00	0.00	0.00
95	Vitamin K1 (Phytomenadione) 1 mg/mL, 1 mL, inj.	Amp	0.02	0.02	0.03
96	Zinc Sulphate 10mg	Tab	0.02	0.03	0.04
97	Zinc, Iron, Multivitamin, Folic Acid	Btl	0.80	0.96	1.29

SN	Medical Supplies				
1	Adhesive tape 2.5 cm x 5 m	Roll	0.44	0.53	0.70
2	Adhesive tape 7.5 cm x 5 m	Roll	1.50	1.80	2.42
3	Blade For Surgical Knives Size 20	each	0.10	0.12	0.16
4	Blade For Surgical Knives Size 22	each	0.10	0.12	0.16
5	Blood bags 250ml	Bag	0.10	0.12	0.16
6	Blood grouping Anti A,B,D Set (A,B,D) 10mL	each	10.00	12.00	16.10
7	Bloodgroup anti A 200 tests, monoclonal, 10 ml(**)	each	10.00	12.00	16.10
8	Bloodgroup anti A/B 200 tests, monoclonal,10ml(**)	each	10.00	12.00	16.10
9	Bloodgroup anti B 200 tests, monoclonal, 10 ml(**)	each	10.00	12.00	16.10
10	Bloodgroup anti D 200 tests, monoclonal, 10 ml(**)	each	10.00	12.00	16.10
11	CPD-a bag 35 ml for 250 ml blood + taking set	Bag	1.00	1.20	1.61
12	CPD-a bag 63 ml for 450 ml blood + taking set	Bag	1.10	1.32	1.77
13	Cotton Wool Absorbent Bp 500g	Bag	3.50	4.20	5.64
14	Examination Gloves, Latex, Pre Pwd,	Pair	0.04	0.05	0.06
15	Needle Luer 21Gx 1.1/2" (0.8x 38 mm), Ster., disp.	each	0.02	0.02	0.03
16	Suture Catgut Chromic (0) 1 x 150 cm, S114H	each	1.83	2.20	2.95
17	Suture Vicryl (1) 2 x 70 cm, V627H	each	1.83	2.20	2.95
18	Suture Vicryl® (2/0) 70cm + 3/8 ct ndl 30mm, V586H	each	1.83	2.20	2.95
19	Suture Vicryl® (3/0) 45cm+3/8ct ndl 18.5mm, V393H	each	1.83	2.20	2.95