

Cost Analysis for the Liberia Health Equity Fund

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SUMMARY

The purpose of this analysis is to provide a narrative companion to the Liberia Health Equity Fund (LHEF) costing model, which was generated to provide a baseline and 15-year projection estimates for the costs for purchasing the Basic Package of Health Services (BPHS) in Liberia for the entire population.

By having a robust idea of how much the BPHS will cost to offer on a per capita basis, the Ministry of Health and Social Welfare (MoHSW) can choose to increase or decrease the numbers of services, dependent on the available resource envelope and the projected (or desired) numbers of enrolled members. The benefits package, the target population and the available resources can each be increased or decreased to a point at which an acceptable trade-off has been achieved between the three.

Costing Methodology Employed in 2009 RBHS Costing

The model analyzed and estimated the costs using a bottom-up, or micro-costing, approach. It determined the standard costs associated with the delivery of a particular health service, taking into account staff time, drugs, medical supplies and tests required. Operating costs and indirect staff costs were distributed proportionally across the health services in accordance with direct staff costs. In other words, the model determined the average cost for the delivery of a quality service.¹

In order to estimate a total cost requirement for delivering the BPHS, the average costs were then combined with projected service utilization levels. Utilization was determined by using normative incidence and prevalence rates together with catchment population figures to estimate the number of each type of service needed for *full coverage of the community* (i.e. total need). The model could then be set to meet varying percentages of the total need to represent different utilization assumptions. “Low utilization” was closest to actual utilization levels in 2009; “high utilization” represented the maximum achievable level in the medium term, and “medium” utilization represented a realistic goal that fell somewhere in between the two.

The result of the 2009 costing exercise produced a per capita average cost of delivering the BPHS to the entire population based on varying utilization assumptions. Those figures serve as the starting point of the current analysis.

Baseline and Projections Based on the RBHS Costing

This brief will focus on the low and medium utilization projections and will assume that utilization under the LHEF will fall somewhere between the two. Figures are therefore

¹Salary costs were factored into the original costing in 2009, but later removed in this analysis for consistency with the proposed LHEF.

presented as ranges with the low utilization marking the lower boundary of the range and the medium utilization the upper boundary of the range.

Baseline estimates of the cost of purchasing the BPHS in 2010 were calculated using the following cost formula:

$$\text{Cost} = \text{Population} \times [\text{Price} \times \text{Quantity (or Utilization)}] + \text{Administrative Costs}$$

This baseline figure was projected through 2025 by factoring in population growth and the rise in medical costs. The data used for this exercise are secondary source data such as population estimates and some macroeconomics' statistics from the World Development Indicators data series and Liberian Demographic and Health Survey reports.

Findings

Baseline: Based on the per capita utilization and service-level cost figures from the RBHS costing, and the estimated population figure for Liberia for the year 2010 of just under 4 million people, **the estimated cost of purchasing the BPHS in 2010, exclusive of salaries, is US\$ 21.4 million (low) to US\$ 32.4 million (medium).** These figures assume full coverage of the population.

Projection: Taking 2010 as the baseline year and projecting into the future based on population growth and marginal increases in medical costs over time, **the estimated cost of purchasing the BPHS in 2015 would be \$27.5 million (low) to \$41.7 million (medium), in 2020 would be \$32.7 million (low) to \$49.5 million (medium) and in 2025 would be \$38.8 million (low) to \$58.9 million (medium).** These figures are all exclusive of salaries.

Year	Low	Medium
2010	\$21.4 m	\$32.4 m
2015	\$27.5 m	\$41.7 m
2020	\$32.7 m	\$49.5 m
2025	\$38.8 m	\$58.9 m

Discussion and Implications

It is important to reiterate that these figures represent the non-salary cost of purchasing the BPHS in clinics and health centers. They assume full coverage of the population from the first day of operation of the LHEF. As will be discussed later in the document, full coverage will not be achieved overnight and therefore the above figures do not represent the immediate funding requirement. In addition these figures assume the BPHS is the package adopted by the LHEF. This is a working assumption and a

useful guide during the forthcoming discussions by the MoHSW as to whether the BPHS, the EPHS, or some other configuration of services is the recommended option for the LHEF. Decisions as to whether to add or subtract from the BPHS in creating the benefits package for the LHEF should be made in light of the costs presented above, and the projected available resource envelope. Lastly the above figures do not include the administrative costs of the LHEF, which can indicatively be assumed to amount to 15% of purchased services. The actual figure may be less than 15%, depending on certain design decisions. Additional assumptions are listed in the discussion section.

When considering the costs in this analysis, it is important to note two factors. First that enrollment is unlikely to lead to full coverage in the first year. Second that the current proposal is for a phased introduction of the LHEF geographically, in three phases over three years. Once the phasing strategy is finalized and enrollment targets defined, cost projections will be adjusted to account for realistic numbers of population enrolled under the scheme in each phase. In addition to phased enrollment, increased efficiency gains and health system constraints may lower the projected costs of the LHEF.

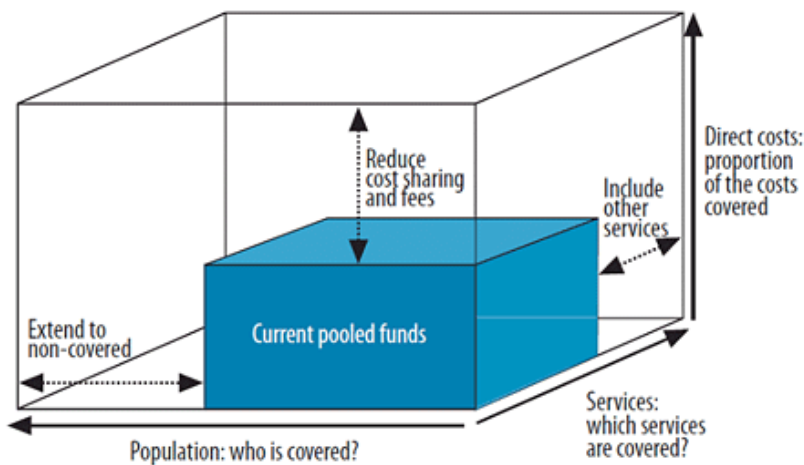
To present a full picture of financing considerations under the proposed LHEF, a number of follow-on costing activities are recommended: 1) costing hospital level data; 2) costing private-sector engagement (as this exercise assumes all LHEF covered services will be provided through public providers only); 3) costing the Expanded Package of Health Services (EPHS); and 4) costing administrative and management costs.

1 INTRODUCTION

In recent years, Universal Health Coverage (UHC) has attracted increasing attention as a unifying goal for developing and developed countries alike in the post-MDG era. Despite varying interpretations of what UHC means, the emerging consensus is captured by the following definition put out in the World Health Report 2010: *To provide all people with access to needed health services (including prevention, promotion, treatment and rehabilitation) of sufficient quality to be effective; [and to] ensure that the use of these services does not expose the user to financial hardship.*

The path to universal coverage involves important policy choices and inevitable trade-offs. In designing a health insurance mechanism for UHC, decisions on *where* and *how* to spend available pools of funding are reflections on the values and priorities of the government.

As illustrated in the following figure by the World Health Organization (WHO), pooled funds for health can be used toward UHC in three ways: 1) to extend coverage to those individuals who previously were not covered (population); 2) to extend coverage to services that previously were not covered (services or benefits package); or 3) to reduce the direct payments needed for each service (direct costs).



Three dimensions to consider when moving towards universal coverage

These dimensions of coverage reflect a set of policy choices about benefits and their rationing that are among the critical decisions facing countries in their reform of health financing systems towards universal coverage. They also represent a set of trade-offs. Increased coverage costs more. Increased services cost more. Reduced direct payments by the population cost more to the purchaser. Inevitably making strides along one axis has offsetting effects for the others.

In Liberia, the current effort to introduce national health insurance has emphasized the values of equity and fairness, particularly across geographic regions. Conversations to date have suggested that health insurance will likely cover the entire population in a phased approach; in other words, the box will stretch far along the population axis. Choices therefore need to be made about proceeding along the three dimensions in a way that best fits Liberia's objectives as well as the financial, organizational and political contexts.

In thinking about the "services" dimension (i.e. benefits), one point to note is that health insurance mechanisms may or may not have a defined benefit package. In some mechanisms, the package is *implicit*, where the assumption is that any service that a patient may need is provided (to the extent that the individual health facility is able to obtain the necessary resources). In other mechanisms, there are *negative lists*—lists of services that are *not* provided. Lastly, there are mechanisms with *defined benefit packages*, in which a member of a scheme knows ahead of time which services are available under the plan and which services are not.

For health insurance planners and managers, having a defined benefit package allows for defining and limiting the cost of the services provided to the target population (the *direct costs* axis of the WHO cube, also called rationing), which consequently may provide more scope for equity and cost-sharing considerations (the other two axes of the WHO cube).

The purpose of this analysis is to provide a narrative companion to the Liberia Health Equity Fund (LHEF) costing model generated to provide a baseline and 10-year projection estimates for the costs for purchasing the BPHS in Liberia for the entire population.

By having a robust idea of how much the BPHS will cost to offer on a per capita basis, the Ministry of Health and Social Welfare (MoHSW) can choose to increase or decrease the numbers of services, dependent on the available resource envelope and the projected (or desired) numbers of enrolled members. The benefits package, the target population and the available resources can each be increased or decreased to a point at which an acceptable trade-off has been achieved between the three.

2 METHODOLOGY

In 2009, USAID/Liberia Rebuilding Basic Health Services (RBHS) Project conducted a service-level costing of the BPHS using the CORE Plus Excel-based tool. This study has taken the results of that costing as its starting point.

Summary of 2009 Costing Study Methodology

The 2009 study had structured the BPHS from clinics to health centers into three main categories: curative, preventive and delivery services. The methodology used was based on normative assumptions of the needs and the cost of inputs to care, for which basic sensitivity analyses were done under assumptions of low (actual use of care), medium and high utilization of health services. In other words, in any given year: *average cost per service x utilization assumptions = total cost requirement for purchasing the BPHS*.

The full 2009 RBHS costing report contains an extensive section on methodology, which will not be reproduced here. The main points of that methodology are summarized as follows:

On estimating the average cost per service:

The standard costs² were estimated by determining the quantities of resources (staff type and time, drugs and supplies, and tests) required to provide a good quality service, based on official MOHSW treatment guidelines. These quantities are then multiplied by the price of each resource to produce a *total standard cost* for each service. Indirect costs (e.g. staff time for non-patient tasks, facility operating costs) were allocated across the costed services in proportion to the direct staff cost. In other words, the model calculated the average cost per service at each service-delivery level.

On developing the set of utilization assumptions:

It used incidence and prevalence rates together with catchment population figures to estimate the number of each type of service needed for 100% coverage of the community. Then, taking those figures as 100% utilization, the model produced total cost projections based on three possible utilization levels:

²The term « standard cost » is used in the 2009 RBHS costing report to represent an average cost of service that is based not on actual utilization, but rather on a pre-specified standard of care. This analysis uses the standard cost figures and refers to it as « average cost » throughout the report. The distinction between standard cost and actual cost is elaborated in more detail in the Discussion section.

- **Low utilization:** *The low set of targets represent short-term targets that should be achievable. They are mainly based on **an average of the total actual utilization figures** for the sample of donor-supported facilities and can be regarded as a reasonable target for facilities that have less than this average utilization level. The average number of visits (headcount) per capita was 0.61 for that sample. This was increased by 18% to reflect the average number of services per visit. That gives an average of 0.72 services per capita, which represents 27% of the total normative number of 2.64 services per capita. The figure of 27% was used for all services except immunizations, for which we used the individual coverage figures for the country, based on the 2007 DHS report. Due to the fact that immunization coverage was significantly higher than 27%, the average services per capita then increased from 0.72 to 0.92.*
- **Medium utilization:** *The medium set of targets uses a figure of 77% for all immunizations and 50% for the other services. The figure of 77% was set to be just higher than the highest of the individual immunization levels achieved in 2007. The figure of 50% is roughly double the low level of utilization of 27% and roughly half way between the 27% and the high level of utilization of 70%.*
- **High utilization:** *The high set of targets uses a 90% utilization level for all immunizations and a 70% utilization level for the other services (as recommended by the Pool Fund). These are assumed to be the **maximum targets achievable** in the medium term."*

This analysis will focus on the low and medium utilization projections and will assume that utilization under the LHEF will fall somewhere between the two. Figures will therefore be presented as ranges with the low utilization marking the lower boundary of the range and the medium utilization the upper boundary of the range.

Building on the 2009 Study Findings

Projecting the cost of purchasing the BPHS, assuming national coverage, is based on the RBHS unit costing typology and was extrapolated to the whole country and projected over time. The following section outlines the two-step process: 1) establishing a baseline cost for 2010, and 2) projecting the baseline figures for the period 2010-2025.

Establishing a baseline cost for 2010

The first step was to set a baseline in the year of the costing as a starting point for projections. The basic formula to calculate the cost of purchasing a particular service or set of services in a given year is:

Cost Formula: $E = \text{Pop} \times [P \times Q] + A$ where

E = Cost of purchasing the BPHS

Pop = Population

P = Unit or Average price of service

Q = Quantity of service (i.e. utilization) per capita

A = Administrative costs

Using the above formula, we calculated the baseline costs for purchasing the BPHS in 2010. Specifically:

- *Population:* The baseline figure for population size is based on the 2008 Census.
- *Price:* Average cost of services by delivery type and facility were sourced from the 2009 costing described above.
- *Quantity:* Two different quantities were used for the utilization variable – one each for low and medium utilization assumptions (as defined in the 2009 costing study) – with the resulting cost estimates representing the lower and upper boundaries of estimated costs for the LHEF.
- *Administrative costs* were not included, as the average costs estimated in the 2009 costing exercise already included administrative and indirect costs.

Projecting costs over time (2010-2025)

The second step was to take the 2010 baseline costs and project them over time until 2025. We used the formula above for each projected year, factoring in two variables that each affect projected cost: 1) population growth and 2) rise in health care costs.

Population growth rate is based on the current population growth rates of 2.7% [citation] with a gradually diminishing trend over time based on generally observed reductions in fertility rates. In our projection, the growth rate slowly decreases to 2.0% by 2025 (Table 4). Changes in the population age pyramid were not considered for this relatively short timeframe.

To reflect health care cost increase pressures coming from technology change and other endogenous and exogenous factors, we applied an elasticity factor each year equal to 0.3 percent of the growth of real GDP per capita.³ In other words, a 1% increase in the

³ The elasticity factor selected is based on the findings from Olaniyan et al (2013), which found a long-run economic relationship between health care expenditure and gross domestic product (GDP) in 32 Sub-Saharan African (SSA) countries (including Liberia) during 1995-2009. The income elasticity coefficient relative to health care expenditure for the whole 32 SSA countries considered was 0.33. In the specific case of Liberia, even though it was a statistically insignificant coefficient, that income elasticity was 0.8. We consider the SSA average as it appears more compliant with Liberia's context.

change per capita GDP increases per capita health expenditure by 0.3 percent. GDP per capita growth rates were estimated at a conservative 2.6% average over the period 2015 to 2025, with higher growth rates currently being observed between 2010 and 2014 (Table 4). Taking these factors into consideration, we projected the increasing costs of BPHS services over 10 year starting on 2010.

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3 FINDINGS

Utilization

The actual utilization rates assessed by RBHS in 2009 are shown in Table 1 under the “low” column for each level of facility. As noted earlier the medium utilization figures represent a rough doubling of the utilization figures assessed in 2009 for most services, apart from immunizations. The utilization figures were assessed through a combination of the HMIS, the Demographic and Health Survey and other sources. The estimates are based on catchment populations of 8,000 for clinics and primary level health centers, and 32,000 for secondary level health centers.

Table 1: Utilization of clinics and health center services in Liberia, 2009

	Clinic		Clinic with Lab		Health center – Primary		Health center – Secondary	
	Low	Medium	Low	Medium	Low	Medium	Low	Medium
Quantity of service per capita								
Curative	0.16	0.29	0.16	0.29	0.16	0.29	0.02	0.04
Preventive	0.74	1.18	0.74	1.18	0.74	1.18	0.01	0.02
Delivery	0.01	0.03	0.01	0.03	0.01	0.03	0.002	0.003
Overall	0.92	1.50	0.92	1.50	0.92	1.50	0.03	0.06

Price

The average costs per service, assessed across all services in the BPHS in 2009, are presented in Table 2. It should be noted that average costs per service *decrease* with increased utilization. This is due to the inefficiency of operating facilities which are under-utilized. With greater utilization, some costs which are incurred regardless of the level of utilization are spread over a larger number of patients.

Table 2: Average cost per service in clinics and health centers in Liberia, 2009

	Clinic		Clinic with Lab		Health center - Primary		Health center - Secondary	
	Low	Medium	Low	Medium	Low	Medium	Low	Medium
Average cost per service, exclusive of salaries								
Curative	4.68	3.88	5.11	4.11	5.54	4.20	9.13	7.31
Preventive	1.17	1.11	1.10	1.05	1.10	1.05	6.10	6.15
Delivery	6.69	4.61	6.17	4.30	5.81	4.92	10.79	9.19
Overall	1.86	1.71	1.87	1.71	1.94	1.74	8.24	7.04

* Note: These figures assume that the proportion of costs attributable to personnel costs (i.e. salaries) is consistent across service types (curative, preventive, delivery).

Establishing a Baseline Cost Estimate for UHC

Based on average costs presented by level of health care and by applying the Cost Formula (outlined in the Methodology section), Table 3 shows the cost of purchasing the BPHS at full national coverage up to the level of health center, excluding salaries, for year 2010 in millions of US dollars⁴.

Table 3: Cost of purchasing the BPHS at full population coverage, excluding salaries (millions of USD, 2010)

	Clinic		Clinic with Lab		Health center - Primary		Health center - Secondary		Total Cost	
	Low	Med	Low	Med	Low	Med	Low	Med	Low	Med
Curative	2.96	4.45	3.23	4.72	3.51	4.82	0.72	1.16	10.43	15.15
Preventive	3.42	5.18	3.22	4.90	3.23	4.92	0.24	0.49	10.11	15.50
Delivery	0.26	0.55	0.24	0.51	0.23	0.58	0.09	0.11	0.82	1.75
Overall	6.65	10.18	6.69	10.13	6.97	10.33	1.05	1.75	21.36	32.40

Under low utilization targets and excluding salaries, US\$ 21.4 million would be the baseline cost of purchasing the BPHS in Liberia in 2010; that amount increases to US\$ 32.4 million under the medium utilization target (Table 3).

Projections of UHC Costs (2010-2025)

Additional assumptions were necessary for projecting costs beyond 2010, including: 1) population growth rate; 2) rise in health care expenditures due to technology change and other endogenous and exogenous factors. The projection methodology is covered in more detail in an earlier section (see page 10). Table 4 below shows the calculation of income elasticity factors for health care expenditures in Liberia, as well as projected population growth.

⁴ Unit costs were estimated by end of 2009. We have set a baseline of 2010.

Table 4: Calculation of Income Elasticity Factors for Health Care Expenditures in Liberia

Year	GDP (US\$)	Annual GDP growth	Population (millions)	Pop. growth rate	GDP per capita	GDP per capita growth rate	Elasticity x GDP per capita growth	Healthcare Expenditure Growth
2010	1,292,696,476	19.0	3,957,990	2.7%	326.6			
2011	1,537,753,885	12.8	4,079,697	2.7%	376.9	15.4%	4.6%	4.6%
2012	1,733,823,553	8.9	4,190,435	2.6%	413.8	9.8%	2.9%	7.7%
2013	1,888,133,849	7.7	4,304,179	2.6%	438.7	6.0%	1.8%	9.6%
2014	2,033,520,155	5.4	4,421,010	2.5%	460.0	4.9%	1.5%	11.2%
2015	2,143,330,244	5.4	4,541,013	2.5%	472.0	2.6%	0.8%	12.1%
2016	2,259,070,077	5.4	4,664,272	2.4%	484.3	2.6%	0.8%	13.0%
2017	2,381,059,861	5.4	4,790,878	2.4%	497.0	2.6%	0.8%	13.9%
2018	2,509,637,093	5.4	4,920,920	2.3%	510.0	2.6%	0.8%	14.8%
2019	2,645,157,496	5.4	5,054,492	2.3%	523.3	2.6%	0.8%	15.7%
2020	2,787,996,001	5.4	5,191,689	2.2%	537.0	2.6%	0.8%	16.6%
2021	2,938,547,785	5.4	5,332,611	2.2%	551.1	2.6%	0.8%	17.5%
2022	3,097,229,366	5.4	5,477,358	2.1%	565.5	2.6%	0.8%	18.4%
2023	3,264,479,752	5.4	5,626,033	2.1%	580.2	2.6%	0.8%	19.3%
2024	3,440,761,658	5.4	5,778,745	2.0%	595.4	2.6%	0.8%	20.3%
2025	3,626,562,788	5.4	5,935,601	2.0%	611.0	2.6%	0.8%	21.2%

figures in blue are calculations based on published GDP figures
 figures in purple are projections from African Economic Outlook
 figures in grey take the 2014 projection and hold it constant

Note: Elasticity of health expenditure growth relative to GDP growth is on average 0.3 for 32 African countries, Olaniyan et al, 2011

Based on these assumptions, as shown in Table 4, health care costs would increase by approximately 12% by 2015, 17% by year 2020, and 21% by 2025.

Projecting the cost of purchasing BPHS from 2010 – 2025

As explained in earlier sections, this brief will focus on the low and medium utilization projections and will assume that utilization under the LHEF will fall somewhere between the two.

Under the **low utilization** assumption, purchasing BPHS up to the level of health clinic would cost around \$27.5 million by 2015, \$32.7 million by 2020, and \$38.8 million by 2025 (Table 5).

Under the **medium utilization** assumption, purchasing BPHS up to the level of health center care would cost around US\$ 41.7 million by 2015, US\$ 49.3 million by 2020, and US\$ 58.9 million by 2025 (Table 5).

Table 5: Projected Costs of Purchasing BPHS, excluding salaries (millions of USD, 2010-2025)

Non-Salary Costs of universal health care coverage in current US\$										
Year	Clinic		Clinic with Lab		Health center Primary Level		Health center Secondary Level		Total	
	Low	Medium	Low	Medium	Low	Medium	Low	Medium	Low	Medium
2010	6.65	10.18	6.69	10.13	6.97	10.33	1.05	1.75	21.36	32.40
2011	7.17	10.98	7.22	10.92	7.51	11.14	1.13	1.89	23.04	34.94
2012	7.58	11.61	7.63	11.55	7.95	11.78	1.20	2.00	24.35	36.94
2013	7.93	12.14	7.98	12.08	8.31	12.32	1.25	2.09	25.47	38.62
2014	8.26	12.65	8.32	12.59	8.66	12.83	1.30	2.18	26.54	40.25
2015	8.55	13.10	8.61	13.03	8.96	13.29	1.35	2.26	27.47	41.67
2016	8.85	13.56	8.91	13.49	9.28	13.75	1.40	2.33	28.44	43.13
2017	9.17	14.03	9.23	13.96	9.60	14.24	1.45	2.42	29.44	44.65
2018	9.49	14.53	9.55	14.45	9.94	14.74	1.50	2.50	30.48	46.22
2019	9.82	15.04	9.89	14.96	10.29	15.26	1.55	2.59	31.55	47.85
2020	10.17	15.57	10.23	15.49	10.66	15.80	1.61	2.68	32.66	49.53
2021	10.53	16.12	10.59	16.04	11.03	16.35	1.66	2.78	33.81	51.28
2022	10.90	16.68	10.97	16.60	11.42	16.93	1.72	2.87	35.00	53.08
2023	11.28	17.27	11.35	17.18	11.82	17.52	1.78	2.97	36.23	54.95
2024	11.68	17.88	11.75	17.79	12.24	18.14	1.84	3.08	37.51	56.89
2025	12.09	18.51	12.17	18.42	12.67	18.78	1.91	3.19	38.83	58.89

4 DISCUSSION

The purpose of this costing exercise was to develop a baseline and projection estimates for the cost of purchasing the BPHS through universal health insurance in Liberia at the clinic and health center levels.

Key assumptions of the analysis are listed below:

- The utilization of services within the benefits package is assumed to stay static over time, which is to say that there will be consistent growth over time as the population and membership grow, but there is no assumption of an increase in use of one service over another.
- Similarly, the model assumes that the health system (e.g. human resources, infrastructure, IT capacity) will expand concurrently during the 2010-2025 period to allow for increased provision of BPHS services.
- The model assumes that the proportion of standard costs attributable to salary is consistent across service types (curative, preventive, and delivery). In reality, the proportion of costs attributable to salary may be higher for curative and delivery services, given the large amount of staff time required and higher quality services.
- Results are presented in real terms, ignoring the impact of inflation. These numbers are generally easier to comprehend and present a clearer picture of the impact of rising real medical costs.
- Benefits package doesn't change over the 10 years of the projection, which is to say that no services are added or subtracted over time.
- The national population grows at an initial rate of 2.7% annually (World Development Indicators, 2012), with the growth rate falling gradually to 2.0% by 2025.
- Ten percent of curative cases at the clinic level are assumed to be referred to the health center level.
- Populations of individual counties assumed to grow in a standard way.
- The model excludes the following costs:
 - Capital expenditures and depreciation costs
 - Salary costs
 - Cost of national communication campaigns or national public health responses (such as to ebola or other outbreaks)
 - Cost of training staff (pre-service or in-service)

- Cost of related services sometimes used by a clinic or health centre, such as blood, ambulance and external laboratory tests
- Cost of County Health Teams. (Note: Management costs of facilities, and management costs incurred by facilities for community activities are included.)
- Cost of some preventative activities carried out primarily by national programs, e.g. distribution of bed nets to households
- Related services such as blood, ambulance and external lab tests not included.
- The model only includes expenditures made by, or on behalf of, facilities. Does not include time of volunteers or NGO or donor agency costs, other than those paid to, or on behalf of, facilities (incl. donated drugs and vaccines).⁵

It is important to reiterate that **these figures represent the non-salary cost of purchasing the BPHS in clinics and health centers**. Decisions as to whether to add or subtract from the BPHS in creating the benefits package for the LHEF should be made in light of the costs presented above, and the projected available resource envelope.

When considering the costs in this analysis, one key point is that **enrollment, and therefore LHEF costs, will not skyrocket to projected levels in the first year of implementation**. As of June 2014, the current proposal is to geographically phase in enrollment of the national population across three years. Once the phasing strategy is finalized and enrollment targets defined, cost projections can be adjusted to account for realistic numbers of population enrolled under the scheme in each year.

⁵ The exception to this is financing directly channeled to facilities through results-based financing mechanisms, which were initiated after the 2009 RBHS costing study was performed and therefore not included in the costing.

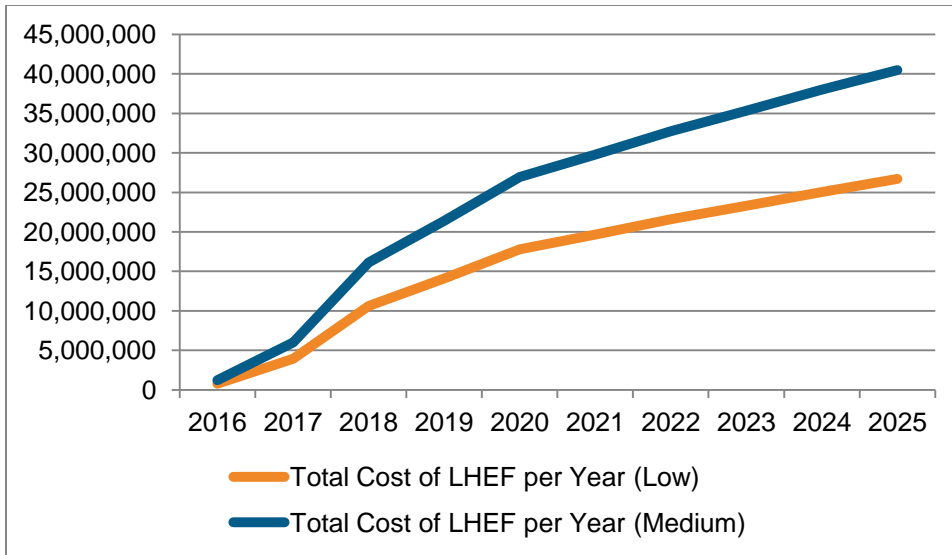


Figure 1: 10-Year Cost Projections of the Liberia Health Equity Fund (2016-2025)

In addition to phased enrollment, a number of factors may lower the projected costs of the LHEF:

1) Increased efficiency gains

One of the main benefits of instituting a national health insurance scheme is increased efficiency in the health sector through active purchasing of rendered services. The savings gained from increased efficiency should, theoretically, have a reduction effect on projected costs of the LHEF. While these cost savings were not included in the current analysis, any discussion on the projected costs of the LHEF should take potential efficiency gains into consideration.

2) Health system constraints

Given existing human resource, supply chain, and infrastructure constraints, as well as the physical barriers to access to care, it is likely that **the health system may not expand fast enough to actually support the projected service provision and utilization levels under the LHEF**. For this reason, we present a range of low – medium utilization, which can be interpreted as a realistic target range between 1) actual utilization levels in 2009 and 2) an increase (approximately doubling) from the 2009 utilization levels.

Based on the limited scope of this costing exercise, we recommended a number of follow-up activities, which are listed below:

1. **Costing hospital level data.** This analysis was based on the 2009 RBHS costing exercise, which only covered the health facility to health center level. Additional information on service costs at the hospital level would inform decisions on the LHEF design.
2. **Costing private-sector engagement.** This analysis estimates the cost of the BPHS under the assumption that health service provision is exclusively through public providers. As noted under the “Assumptions” section, all figures herein exclude the cost of public sector salaries, which will continue to be financed by the Ministry of Finance budget allocations.

A separate costing exercise will need to be conducted to understand the level of financing which would be required to incentivize appropriately the private sector to participate in the LHEF.

3. **Costing the Expanded Package of Health Services (EPHS).** The RBHS costing was conducted in 2009 and therefore has made use of cost estimates and projected utilization which were deemed appropriate that year. It was noted in the RBHS report that the HMIS had only just been rolled out nationally and therefore that need estimates were necessarily based on incomplete information. It also costed the Basic Package of Health Services, rather than the Essential Package of Health Services (EPHS), as the BPHS was the package in existence at the time.

It is recommended that a follow-up costing exercise be undertaken to update the cost estimates for services, make use of more complete HMIS information now available, as well as consider costing the additional services included in the Essential Package of Health Services, as well as any others which might be considered following the imminent review of the EPHS to be conducted by the MoHSW. The inclusion of some cost-effective and inexpensive non-communicable diseases might also be considered.

4. **Administrative and Management Costs.** It should be noted that the administrative costs of running a mechanism such as the LHEF have not been included here. For the time being these can be estimated at roughly 15% of the cost of the funds being disbursed to providers to purchase services; however, an assessment should be conducted of administrative costs reported by purchasing entities in other settings.

5 CONCLUSION

The purpose of this analysis was to provide a narrative companion to the Liberia Health Equity Fund costing model, which provides a baseline and 15-year projection (2010-2025) for the non-salary costs for purchasing the Basic Package of Health Services in Liberia for the entire population.

This analysis has focused on two levels of utilization (low and medium), with the assumption that actual utilization under the LHEF will fall somewhere between the two. Under the low utilization assumption, purchasing BPHS up to the level of health clinic would cost around \$27.5 million by 2015, \$32.7 million by 2020, and \$38.8 million by 2025. Under the medium utilization assumption, purchasing BPHS up to the level of health center care would cost around US\$ 41.7 million by 2015, US\$ 49.3 million by 2020, and US\$ 58.9 million by 2025.

With the understanding of how much the BPHS will cost across delivery types and facility levels, the MoHSW can now choose to increase or decrease the numbers of services, dependent on the available resource envelope and the projected (or desired) numbers of enrolled members. The benefits package, the target population and the available resources can each be increased or decreased to a point at which an acceptable trade-off has been achieved between the three.

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ANNEX

Annex 1. Basic Package of Health Services Included in Cost Estimates

Primary level (Clinic)	Type of care	Secondary level (Health center)	Type of care
Antenatal Care	Preventive	Antenatal Care HC	Preventive
Labor and Delivery Care	Other	Labor and Delivery Care HC	Other
Postpartum Care	Preventive	Postpartum HC	Preventive
Postpartum Vitamin A	Preventive	Newborn Care HC	Preventive
Newborn Care	Preventive	Treatment STIs - Male HC	Curative
Family Planning: OCs	Preventive	Treatment STIs - Female HC	Curative
Family Planning: DMPA	Preventive	Severe Watery diarrhoea <5 years	Curative
Family Planning: IUCD	Preventive	Severe Bloody diarrhoea <5 years	Curative
Family Planning: Condoms	Preventive	Severe Pneumonia <5 years	Curative
Treatment STIs - Male	Curative	VCT HC	Curative
Treatment STIs - Female	Curative	Severe Malaria Treatment <5 years	Curative
Immunization: BCG <1 year	Preventive	Severe Malaria Treatment >5 years	Curative
Immunization: Pentavalent 1,2,3	Preventive	Epidemic Diseases - Treatment	Curative
Immunization: OPV 1,2,3	Preventive	Mental Health HC	Curative
Immunization: Measles <1 year	Preventive	Sexual Gender Based Violence HC	Curative
Immunization: Yellow fever	Preventive	Emergency First Aid HC	Curative
Immunization: TT pregnant women	Preventive	Abortion Complications HC	Other
Immunization: TT non-pregnant women	Preventive		
Watery diarrhoea <5 years	Curative		
Bloody diarrhoea <5 years	Curative		
Pneumonia <5 years	Curative		
Child Vitamin A	Preventive		
Child Deworming	Preventive		
Child iron supplementation	Preventive		
VCT	Curative		
TB Diagnosis	Curative		
TB Treatment	Curative		
Malaria Treatment <5 years	Curative		
Malaria Treatment >5 years	Curative		
Malaria Prevention: IPT	Preventive		
Cholera	Curative		
Epidemic Diseases - Refer to Hospital	Curative		
Mental Health	Curative		
Sexual Gender Based Violence	Curative		
Emergency First Aid	Curative		
Delivery at home with skilled staff	Other		
Abortion Complications	Other		