

The Free Health Care Initiative in Sierra Leone – evaluating a health system reform, 2010-2015

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Abstract

This article presents the findings of a theory-based evaluation of the Sierra Leone Free Health Care Initiative (FHCI), using mixed methods. Analytical approaches included time series analysis of national survey data to examine mortality and morbidity trends, as well as modelling of impact using the Lives Saved Tool (LiST) and expenditure trend analysis. We find that the FHCI responded to a clear need in Sierra Leone, was well designed to bring about needed changes in the health system to deliver services to the target beneficiaries, and did indeed bring funds and momentum to produce important systemic reforms. However, its ambition was also a risk and weaknesses in implementation have been evident in a number of core areas, such as drugs supply. We conclude that the FHCI was one important factor contributing to improvements in coverage and equity of coverage of essential services for mothers and children. Modelled cost-effectiveness is high – in the region of US\$ 420 - US\$ 444 per life year saved. The findings suggest that even – or perhaps especially – in a weak health system, a reform like fee removal, if tackled in a systematic way, can bring about important health system gains which benefit vulnerable groups in particular.

Keywords

Fee exemption; Sierra Leone; health system reforms; maternal and child health; policy evaluation; cost effectiveness

Background

Introduced by the President of Sierra Leone in 2010, the Free Health Care Initiative (FHCI) abolished health user fees for pregnant women, lactating mothers and children under five years of age. This action was taken in response to very high mortality and morbidity levels among mothers and children in Sierra Leone – some of the worst in the world – and reports that financial costs were a major barrier to health service uptake and use by these groups ¹.

The global movement towards universal health coverage has emphasised the importance of reducing out of pocket payments for health care, and especially fees charged at the point of use for essential health care ². There is a growing body of literature documenting lessons learned from different national policies to reduce these user fees, especially for mothers and children ³⁻⁵. The FHCI in Sierra Leone has not been assessed hitherto, and the lessons from it are of wider interest, for a number of reasons. The first is that the policy was implemented in a systemic way – not just announcing a change of fees, but complemented by seven ‘supply-side’ interventions intended to strengthen health services in order to meet the additional demand created. As the health system was very weak when the policy was announced in 2009, only seven years after the end of a brutal civil war, the government and development partners recognised that all health system pillars needed reinforcing if free health care was to be realised. The policy ⁶ therefore targeted:

- Drugs and medical supplies: the need for the continuous availability of drugs and other essential commodities;
- Health workforce: deploying an adequate number of qualified health workers;
- Governance: strengthened and effective oversight and management arrangements;
- Infrastructure: development of adequate infrastructure to deliver services;
- Communication with the general public: more and better information, education and communication to stimulate demand for free high-quality health services;
- Monitoring and evaluation (M&E): the need for a comprehensive M&E system
- Financing: sufficient funds to finance the FHCI.

It is also important to note that the FHCI was not a one-off change, but triggered a series of reforms over a period of years; this relates to the systemic approach which was taken and the support which the policy enjoyed from government and development partners in the first few years.

This article reports on the findings of an evaluation of the FHCI, conducted over 2014-16. It assesses whether the FHCI included the right interventions, how effectively the FHCI has been implemented, how it has interacted with other socio-cultural barriers to accessing health care, its contribution to changing health indicators for target groups, its equity effects, whether it had unintended consequences and whether the policy provided value for money in general.

Methods

Evaluation design and approach

The evaluation covered the period 2010 to 2015, although earlier data points were included to establish trends. There were a number of important features of the intervention that influenced the design of the review – firstly, its complexity, as described above, which meant that the evaluation had to consider a whole package of health system reforms, implemented in a dynamic way, triggering and responding to changes over time. The evaluation was therefore not one of a single change in time but of an evolving story. In addition, the FHCI was a ‘whole system’ change, introduced in all regions simultaneously. This meant that there was no ‘control group’ to

provide a counterfactual. No baseline was done and many data sources were introduced after the FHCI or altered by it, which are major constraints to traditional before/after assessments.

The study used a theory-based evaluation approach. A theory of change (

Figure 1) was developed in 2014 by the evaluation team to map out how the FHCI might produce impact and what would need to be examined to understand whether it had done so and, if so, how and why⁷. An evaluation framework mapped possible information sources against each domain. We then drew on mixed methods to populate the framework, triangulating between sources where possible to come to judgements about the plausible contribution of the FHCI. The nature of the intervention and the evaluation design meant that attribution of impact was not possible. The contribution of other factors, such as changing determinants of health (like income), were considered. In addition, the evaluation team had to take account of major epidemiological shocks, in particular the Ebola epidemic of 2014-15 and cholera outbreak in 2012.

The evaluation tested the linkages, relations and assumptions along the theory of change pathway (including drivers and inhibitors which were hypothesised at the start). While the different steps along the pathway are potentially important in terms of producing the outcomes and impacts, many have their own intrinsic value too and so a reductionist assessment should be avoided. A reduction in out of pocket payments, for example, or enhanced awareness of the need to seek medical health in specific circumstances, are valuable in their own right, even if barriers at other points in the chain prevent their full impact on mortality at this point in time.

Data sources and analysis techniques

For service coverage, morbidity and mortality, we used a mixture of household survey data and administrative data. The main survey used is the Demographic and Health Survey (DHS), two rounds of which were conducted in 2008 and 2013. A similar survey was also conducted in 2009: the District Health Services Baseline Survey.

The administrative data came from the Health Management Information System (HMIS). The data are collected by health facilities on a monthly basis.

Financial data came from the Ministry of Health and Sanitation (MoHS), Ministry of Finance and Economic Development (MoFED) and Ministry of Local Government sources, as well as the National Health Accounts (NHA) and interviews.

A fiscal space analysis was undertaken to inform forward financial planning. The core of the fiscal space analysis took the form of a 'funding gap analysis', underpinned by a macroeconomic model to project forward key economic, fiscal and health funding variables⁸.

Cost-effectiveness was modelled using our estimate of the incremental expenditure on the FHCI and the LiST tool to estimate how increased coverage of maternal, newborn and child health (MNCH) interventions now free under the FHCI (compared to a counterfactual) translated into reductions in under-5 and maternal mortality. The key cost-effectiveness metric resulting from our analysis is the cost per life year gained of the FHCI, which is then compared to commonly accepted cost-effectiveness thresholds.

A series of FGDs was undertaken in four districts to collect the community perspective on the FHCI (Table 1). Ethical approval for these was provided by the Sierra Leone Ethics and Scientific Review Committee in 2015.

We also undertook 137 KIIs, many at national level but also including 42 interviews of health workers and managers in the same four districts selected for the FGDs at facility level (Table 2).

We reviewed all available documentation pertaining to each of the health systems pillars under analysis. A rapid literature review of regional experiences was also undertaken to set the Sierra Leonean experience in context.

The evaluation also incorporated key findings from other relevant research projects, such as ReBUILD for analysis of human resources⁹ and some health financing indicators¹⁰.

Study limitations and how they were managed

Beyond the constraints derived from the complex nature of the intervention and evaluation, which have been noted, the main study limitations derived from the quality and availability of data sources that were in some cases absent, partial or weak. For example, the HMIS had a number of issues, including lost data from before April 2011, significant inconsistencies between the data recorded in the database and the situation recorded in health facility registers, and a high level of non-response for key variables. The sample of facilities and variables we checked showed missing values for between 20% and 40% of cases. There were also concerns about the accuracy of NHA data, especially for household expenditure, which could suggest biases in opposing directions. The DHS had particular quality concerns in the 2008 survey - these are evident from the age distributions of the participants in the survey, which do not match the known population profiles from the census. As a result of the weaknesses in the 2008 DHS, we have focused on the 2013 DHS as our main source. We have only used the 2008 survey where necessary, for example to look at changes in relation to equity issues using the disaggregations by wealth quintile and where the 2008 survey is judged the best available baseline. In general, our interpretation and findings are cautious where data are weak, unless other sources are found to corroborate trends.

It is also important to note the assumptions that are built into particular models. In particular, for the LIST tool, inbuilt assumptions of the effectiveness of core MNCH interventions are used to convert coverage to outcome changes. These are based on international literature. In the absence of Sierra Leonean evidence, we have relied on these estimates. Three counterfactuals were developed to understand how these estimates change when some key assumptions vary. Comparison with other reductions in mortality estimates are also made to understand whether the modelled estimates are credible in terms of their level.

Results

We present the findings in relation to the core evaluation questions.

Were the seven priority interventions the right ones to ensure continued and increased utilisation of services by the target beneficiaries?

This question focuses on the relevance and comprehensiveness of the seven pillars - health financing, governance, human resources, drugs and medical supplies, infrastructure, monitoring and evaluation and communication - that formed the focus of the FHCI. The evaluation concluded that each of the pillars was relevant and appropriate – even essential – to making the FHCI potentially effective, and that the FHCI itself responded to a clear population need. It was in fact one of the distinguishing features of the FHCI, compared to previous user fee removal policies in the region, that a systematic approach was adopted, proactively identifying the health system pillars needing strengthening.

Within pillars, some elements should have received more focus, such as human and physical capacity at the facility level, and across the board there have been issues of how reforms were effected. The cross-cutting area that was relatively neglected from the start was quality of care, incorporating crucial elements that have not received sufficient attention, such as improving staff performance and responsiveness, clinical supervision in support of evidence-based practice and monitoring of core quality of care indicators. Community engagement was also limited to monitoring by civil society groups – an innovative strategy but which lost momentum over time.

How and to what extent were the priority interventions that were put in place effective in enabling the FHCI to be operationalised?

The breadth of ambition of the FHCI was a risk, especially given the weak starting position of the health system in Sierra Leone. We found that there was differential effectiveness of implementation across not only the pillars but also over time. Some real gains were achieved initially, notably in terms of revitalising structures for sector governance, increased staffing, better systems for staff management and pay, and for getting funds to the facilities. New monitoring and evaluation systems were introduced, facility audits conducted, infrastructure improved from very weak starting points, and a communication campaign initiated. Underlying these measures was an increase in health financing resources, including a prioritisation of mother and child health programmes and a switch from household to donor spending to some degree (discussed below). However, some important areas such as improvements to pharmaceutical procurement and distribution were not effective, and in other areas, such as human resources, reforming momentum was lost over time. With the benefit of our long lens (six years on from the start of the FHCI), we see problems that were tackled just prior to the FHCI, like cleaning the payroll, re-emerging as problems now in the post-Ebola era.

What are the socio-cultural issues that affect the uptake of free health care among the target beneficiaries?

Studies undertaken since 2013 highlight that health care-seeking in Sierra Leone is a socially negotiated process where factors such as cultural norms, beliefs about disease aetiology, acceptability of interventions, perceptions on quality of care, household power relations and social networks are all very influential ¹¹. Distance from clinics is one factor influencing uptake of care, with more distant households more likely to follow alternative and traditional routes. Gender roles are also important, with fathers typically deciding on most health care decisions that involve taking a child outside the home and which involve payments. Knowledge of danger signs (when to take mothers and children in to facilities) is another factor that influences uptake of care and health outcomes.

We examined five barriers to health care utilisation and health gain: affordability, access, awareness (of the policy and danger signs for mothers and children), attitudes (toward health seeking) and accountability. All show improvements over the period, though some are modest. Household funding as a proportion of total health expenditure has gone from a high of 83% in 2007 to 62% in 2013, with donor funding ranging from a low of 12% in 2007 to a high of 32% in 2013, according to NHA data. However, the absolute expenditure remains low per capita and households are still the predominant source of health care finance. The best available data show a modest reduction in real out of pocket expenditure from 2003/04 to 2011. Data from various sources suggest that chance of payment and amount of payment has reduced for FHCI groups, although evidence also consistently shows that a minority of those in FHCI groups (estimates vary but a recent study ¹² found 12%) are still paying for health care. The attribution of any of these changes to the FHCI is, however, constrained by data limitations.

Awareness of the policy is high among all population groups and there is evidence that the FHCI contributed to increased awareness of danger signs by the community, greater willingness to seek health care for children and, to a small extent, greater accountability on the part of services. However, all of these barriers need continued focus and improvement as the health system moves ahead.

Information from before the FHCI on user satisfaction was not available. However, a survey in 2013 found that the average satisfaction score at primary care level was 7.3 out of 10. Patient satisfaction was generally higher for care received at lower-level facilities (MCH posts, compared to health centres) ¹². Our FGDs highlight concerns about the state of the health care

infrastructure, staffing levels, skills and attitudes, and the non-availability of drugs in particular

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What contributions to health outcomes, among the target groups, did the FHCI make?

The latest United Nations (UN) estimates of maternal mortality put the levels in Sierra Leone at the highest in the world - 1,360 maternal deaths per 100,000 live births in 2015¹⁴. Their central estimates do show declining levels but these are accompanied by wide uncertainly intervals that make it difficult to draw firm conclusions on the trend. It is not possible to measure directly if maternal mortality has changed as a result of the FHCI.

The situation for child mortality is more positive. The UN-modelled estimates show a declining trend. The UN has also produced annual estimates of under-five mortality using the 2013 DHS. These show a sharp reduction in rates immediately after the start of FHCI (

). The levels fell from 187 deaths per 1,000 live births in 2009 to 147 in 2010. The level continued to fall in the following years, reaching 126 per 1,000 live births in 2012. The bulk of this fall relates to children aged between one month and five years. The fall in neonatal mortality (deaths under the age of one month) has been slower.

Information is available in the DHS for prevalence rates of acute respiratory infection (ARI), fever and diarrhoea for children under the age of five. Overall, there was little change in the prevalence of these symptoms in under-fives comparing before and after the FHCI, despite an increase in the coverage of interventions that should have improved these, such as reported bed-net use. In contrast, nutrition indicators for these children did show large improvements, with the proportion of underweight children falling sharply since the beginning of FHCI.

There have been clear improvements in the coverage and uptake of services in recent years and we would expect these to have a positive impact on the outcomes described above. Some of these appear to have started before the launch of the FHCI, but there have also been positive changes after the start of the initiative. In many cases the gap in coverage between geographical areas and wealth groups has closed significantly. These reflect a combination of contributions.

Basic antenatal care (ANC) is now near universal in Sierra Leone, reaching 98% in 2010/11, up from 88% in the period 2004-9; however, the improvement in overall coverage appears to have been predominantly before the FHCI.

Protection from malaria during pregnancy has increased greatly from before the FHCI. The proportions of pregnant women using insecticide treated bed-nets (ITNs) and taking protective treatments (intermittent preventative treatment: IPTp) for malaria both more than doubled, with bed-net use going from 21% in 2009 to 53% in 2013.

Births in a health facility remain low by international standards but there have been improvements. These started before the FHCI but there has also been growth in the numbers since 2010, from 36% between 2004 and 2009 to 57% of all births in the period 2010 to 2013. The picture is similar for births that are attended by a skilled health worker, with improvements both before and after the FHCI.

Coverage of postnatal care (PNC) has improved since the start of the FHCI, with HMIS data in particular showing strong growth: numbers of first PNC appointments rose by 50% between 2010 and 2014. The survey showed coverage up from 60% in 2009 to 73% in 2013. This suggests that the quantity of PNC has increased as a result of the FHCI.

The FHCI brought a surge in the number of consultations for under-fives at health facilities. The numbers more than tripled immediately after the launch to over 300,000 consultations in May 2010. Numbers then declined rapidly, probably as the facilities struggled to cope with the increased demand. By 2014, before Ebola, the number of under-five consultations was once again approaching the 300,000 per month mark (Figure 3).

The picture for child immunisation rates shows improvements, although the size of these is less clear. The survey data show strong growth in fully vaccinated children under one following the FHCI, from 41% in 2009 to 68% in 2013.

The use of ITNs by children under five years old more than doubled between 2009 and 2013 from a quarter of children in 2009 to half in 2013.

Treatment rates for children under five for pneumonia, malaria and diarrhoea all appear to have improved in the years following the FHCI. In particular, the proportion of children under five with symptoms of ARI (a proxy for pneumonia) that were treated with antibiotics doubled to 45% in 2013 compared to 2009.

The gains are clear but the precise contribution of the FHCI is less so as the 2008 DHS was the first of its kind, and so it is hard to assess whether the improvements in coverage accelerated after 2010 compared with earlier growth. Other developments also contributed. Social determinants of health are an important part of the picture too, although in general they have improved slowly over the period and so are not likely to be major explanatory factors behind any health improvements seen. External investments have played a part, especially support to infrastructure and the major disease programmes such as malaria and vaccination. There have been some improvements in poverty rates and the overall economy, albeit subject to recent shocks. In addition to these areas there are no doubt other important influences, such as national road-building programmes that may have increased access to health care, for example. Ebola has also clearly had a major detrimental impact on health outcomes after 2014.

Quality of care is not only affected by the FHCI and its implementation but is also a determinant of its success. In Sierra Leone the challenges to quality of care in the delivery of MNCH services continue to be wide-ranging, with both supply- and demand-side factors as well as underlying social determinants exerting influence. Some progress from a weak base had been made prior to the Ebola outbreak, largely catalysed by the FHCI but also by other programmes focusing on reproductive, maternal, neonatal and child health, according to documentary evidence and KIIs, but the health services remain weak. In addition, the evidence base to track changes to care-giving in facilities is exceptionally weak. Information on inputs and outputs has been collected but to examine the effectiveness of services, more information is needed on indicators such as case fatality rates, re-admissions, sepsis and fresh still births, as well as on some of the influencers such as adherence to protocols and staff competences and responsiveness.

Did the FHCI have a differential impact on different socioeconomic groups or marginalised groups?

The evidence for changes to the gaps in coverage between socioeconomic groups from DHS data is encouraging for the period 2008 to 2013. For almost all indicators inequalities reduced, and for some coverage is now either equal or even positively pro-poor (such as use of treated bed-nets for pregnant women, and childhood immunisation). The gap between geographical areas and wealth groups has narrowed for PNC. The growth in use of ITNs for under-fives was particularly noticeable among those in rural areas and the bottom four wealth quintiles (this was not a direct component of the FHCI but may have been assisted by higher facility contact rates). The lowest

wealth quintile group for child immunisation has seen the most improvements: before the FHCI rates were fairly even across groups but the latest figures show the bottom wealth quintile now has higher rates than others. Skilled attendance at delivery and facility deliveries remain a challenging area, as is the case in many low-resource settings globally. It is plausible that the FHCI has been a significant contributory factor to increasing facility deliveries at a faster rate for the lower wealth quintiles, although significant differences in coverage still remain in absolute terms.

There have also been some improvements in equity across regions in terms of coverage of services. Eastern Region in particular showed great improvements moving from the worst region to the best during this period for treatment with antibiotics of children with ARI symptoms. This pattern for Eastern Region was also seen in improvements in malaria treatment for children.

Combining analysis of the poverty profiles with reported utilisation rates by district from the District Health Information System suggests interesting dynamics. In 2011, Moyamba was the second poorest district and had one of the highest proportions of rural households. However, it is generally reporting the largest use of Peripheral Health Unit (PHU) services. This would need further investigation before it is concluded that the FHCI is well targeted. However, the analysis of the Sierra Leone Integrated Household Survey (SLIHS) 2011 also suggests more significant improvements in MNCH care utilisation in rural areas compared to urban ones¹⁰. Urban Western Area shows the lowest level of poverty but, when combined with Rural Western Area, also some of the lowest levels of PHU service use. This may reflect higher use of private sector and hospitals' services, matching with evidence from our FGDs.

Analysis of per capita funding of health through local councils suggests relatively equal distribution. The same is true of performance-based financing (PBF) funds. However, other general health system resources such as staff are very unequally distributed, which is a long-standing pattern.

It is also possible to use HMIS data to look at the equality of utilisation by gender of children under five, although only from 2011 onwards. Overall, the ratio of girls to boys visiting a PHU for outpatient care has changed in favour of girls since 2011: in that year slightly fewer girls visited a PHU than boys, whereas by 2013 it was slightly more. In 2011, girls in Bonthe visited facilities far less than boys (0.9:1) and in 2012 the same was true in Koinadugu (0.85:1). However, by 2013 more visits were undertaken by girls than boys in all districts other than Bombali.

Other access barriers include physical ones, such as distance to facilities and the transport required to reach them. There have been investments in improving infrastructure and referral systems, such as ambulances, and transport under the FHCI but distance and transport cost remain significant barriers, especially for remote communities.

One study provides insights into access by disabled mothers, who might be expected to have greater difficulty reaching and using services¹⁵. However, access to maternal care for disabled mothers was slightly higher than for non-disabled mothers. Access to ANC, a skilled birth attendant (SBA), a facility for delivery, use of condoms and emergency obstetric care were all roughly equally accessible. This does not indicate any change relating to the FHCI as we lack baseline data, but is an encouraging finding in relation to barriers for the disabled.

In regard to disaggregated analysis of utilisation changes and out-of-pocket (OOP) levels, initial results from one study suggest a mixed picture¹⁰. Overall, they find no discernible impact of the FHCI on utilisation of health facilities and OOP expenditure for children under five, and this result holds when the sample is disaggregated for household location and median household

expenditure. However, they do find a positive effect for utilisation of maternal services, particularly for women in rural areas. We should note, though, that this analysis uses to SLIHS data from 2011 when the HMIS data show that the number of under-five consultations dropped dramatically after the initial surge. It is quite possible that if we had data for other years it would show a different picture.

Were there any unintended consequences of the FHCI?

We examined ten possible unintended consequences of FHCI on the health system and society but only found evidence to support one of them, which was a squeeze on non-salary expenditure within the MoHS budget.

One concern expressed by informants was that the policy would contribute to a *rise in teenage pregnancies*, presumably because of falling costs of maternal health care. However, the DHS data do not back this up. Fertility rates for 15 to 19 year olds fell from 146 per 1,000 women in 2008 to 125 in 2013. All other age groups showed much smaller reductions in fertility.

A second concern, and one which was expressed in some early reports on the FHCI, was that it had contributed to a *drop in preventive services* (through diversion of resources to curative care). However, analysis of the DHS data suggests that this has not been sustained beyond a known fall in community immunisation rates for children in the early months of the FHCI.

It is also reasonable to monitor trends in *utilisation of public services by non-targeted groups* such as general adult outpatient visits and those for older children. However, while there might be some risk of providers focussing on target groups, it seems more likely that general utilisation is driven by demand-side factors, and here the FHCI might have positive effects too, if funds are liberated to pay for non-target group members (as the household data hints). The lack of HMIS data before April 2011 has made it difficult to assess this issue completely and we do not know how relative utilisation rates changed in the year after the start of the initiative. However the trends from 2011 to 2013 appear to show that the number of outpatient consultations has been rising for both FHCI and non-FHCI groups.

On the positive side, it was initially hypothesised that the FHCI could have had an impact in terms of *women's empowerment*. Women in Sierra Leone face discrimination in virtually every aspect of their lives, with unequal access to education, economic opportunities and health care. Given their low status and lack of economic independence, women were rarely able to decide for themselves to go to a health care facility, whether for family planning, antenatal care, deliveries or emergency services, as such a decision was normally in the hands of the husband and often dependent on his assessment of whether they had or could raise sufficient money. However, we found no evidence that a strong shift in gender roles has occurred.

Other *changes to the health care market* might be expected to result from the FHCI. For example, private and faith-based facilities will have had to respond to changing prices in the public sector, though this is mediated by perceptions of quality and convenience. There is qualitative evidence that the private sector continues to be important for health seeking, especially in the Western Area. In the DHS, however, there is virtually no change between 2008 and 2013 in terms of private sector use for delivery care: just over 2% of births take place in a non-government health facility in both years.

In the informal sector, traditional birth attendants (TBAs) can no longer make the living they used to, although there is clear evidence from a number of sources that TBAs have been given the

new role of linking communities and facilities, in part funded through the PBF funds at facility level. This is potentially a positive consequence, as it follows a wider global pattern of changes to the role of TBAs. Participants in our FGDs expressed confidence in the skills of TBAs and also reported using alternative services like ‘traditional healers’ because, according to them, they are cheap and the medication they provide works effectively. It seems overall, therefore, that non-state providers remain resilient.

A number of potential unintended financial consequences were also explored. One was that there might be a *crowding out of other budget lines* in the MoHS budget by the increase in salaries awarded in 2010, which was linked to the FHCI. Looking at a breakdown of MoHS expenditure, there were significant absolute and relative decreases in human resource management, secondary, and tertiary expenditure in 2011, the first budget that included FHCI expenditure. This may reflect a declining non-payroll recurrent budget (with significant increases in the payroll budget). This is a risk that requires careful management, as expectations of continuing salary increases are easily established.

Another concern was whether *other programmatic areas were squeezed* by the allocation of funding to the FHCI. There were large increases in funding to MNCH in the 2011 budget. Although there was the potential for displacement of funding to vertical programmes through funding the FHCI, this does not seem to have materialised and in any case may have been minimised by some of this funding being off-budget and subject to existing donor programmes. MNCH expenditure increased from 8% of non-salary recurrent MoHS expenditure in 2008 to 28% in 2014. Government prioritisation for drugs and medical supplies also increased greatly, doubling from 2010 to 2014.

Analysing NHA data by type of expenditure shows that there were significant expenditure increases in public health programmes in 2010 (even in real terms). This was most notably with respect to MNCH, consistent with the FHCI, but also occurred in relation to malaria prevention. This latter finding is perhaps important giving the potential displacement effect of the FHCI on other health programmes. Inpatient expenditures also reduced, potentially suggesting better first-line treatment.

A third financial concern related to the increasing salaries of health workers was that other public servants would demand similar increases (*wage increase contagion to other sectors*). Wages have increased significantly in Sierra Leone since 2010, making up a growing share of the economy, from around 5% of gross domestic product (GDP) in 2009 to a projected 7% of GDP in 2015. Whilst there is some anecdotal evidence that this led to pressure in other sectors, other factors, such as the minimum wage which was brought in in 2014, appear to be more important.

A final possible unintended consequence that was posited in advance as a potential risk was *opportunistic responses by facility managers* to the FHCI, which would include changing the prices for other services to cope with lower or more irregular funds for FHCI target groups. This was examined in the district KIIs, and no evidence found to support it, with any informal charging more likely a result of the irregularity in salaries or drug supply, rather than the loss of revenue from FHCI groups. The PBF funds have also acted to buffer the losses from FHCI. If they diminish or become more irregular, this risk would be likely to become more real again.

Does the FHCI provide value for money?

Cost of the FHCI

The direct cost of the FHCI for large known items, as an increase on previous funding to similar groups, was estimated at around US\$ 25 million (2010) to US\$ 40 million (2013). These are not far off the calculation of the MoHS in 2012. These are much higher at US\$ 40–90 million if all additional expenditures on these groups are included.

Direct financing of the FHCI (e.g. payroll, drugs, PBF) equated to an increase of an additional US\$4 (2010) to US\$ 6.2 (2013) per capita in government and donor funding. Broader indirect reproductive and child health (RCH) expenditure added US\$ 2.5 (2010) to US\$ 8 (2013) per capita spend per year.

Economy

Human resources and drugs were the two largest expenditure items, accounting for about 50% and 30% of direct FHCI costs, and 25% and 15% of the broader increases in expenditure on RCH as a whole.

For staffing, we cannot comment on changes in overall pay but can say that doctors are very well paid now. Primary care doctors/district medical officers and specialist doctors (public health) received close to SLL 15million, or 52 times the average GDP per capita, and generalist/medical officers and public health sisters received close to SLL 5 million, which is 18 times the average. However, 78% of health workers providing reproductive or contraceptive services were either state enrolled community health nurses or MCH aides. They received between SLL 700,000 and 800,000 per month, between 2.4 and 2.8 times the average income. The relative wages in comparison to average national income were more spread out in Sierra Leone, with doctors receiving much more and nurses receiving much less in Sierra Leone than Ghana¹⁶. In 2013, 60% of general government expenditure on health was spent on health worker remuneration – up from 35% in 2008.

Unit costs for drugs are not available for the pre-FHCI period. However, it appears that up to 76% of the drugs procured for the FHCI were available at a lower price elsewhere, indicating that greater economy could be achieved through stronger purchasing.

Efficiency

If the number of services provided rises, as has been the case in Sierra Leone, then efficiency can be maintained or increased even as core input costs increase. In total, it is estimated that the cost of the FHCI rose from SLL 357 billion in 2010 to SLL 635 billion in 2013. Total expenditure on the FHCI per health facility visit of all kinds fell from SLL 151,164 to SLL 106,606. This was equivalent to a fall from US\$35 to US\$26 per visit. However, the changing case mix (a shift toward less intensive activities such as ANC and relatively smaller increases in deliveries) may mean an increase in expenditure per hour of staff time.

In relation to drugs, there are certainly improvements in efficiency that could be made to the public drug supply system. An independent assessment of the FHCI stock control in 2016 expressed grave concerns regarding the efficiency and effectiveness of logistical arrangements. It revealed poor storage and stock management, 6% missing stock and 31% of drugs expired or within six months of expiry¹⁷.

Cost-effectiveness

Using the LiST tool, we estimate a likely marginal effect of between approximately 1,500 and 1,600 maternal deaths averted over 2010 to 2013 due to coverage of key maternal health interventions being higher than it would have been if it had remained at 2009 values or if the pre-

2009 trend line had continued. Assuming no change from 2008 DHS coverage values is more generous and results in an estimate of 1,900 maternal deaths averted.

We estimate a likely marginal effect of between 6,300 and 7,600 newborn deaths averted over this four-year period. Assuming no change from 2008 DHS coverage values is much more generous and results in an estimate of 10,400 newborn deaths averted.

We estimate a likely marginal effect of between 13,600 and 13,800 child (1-59 months) deaths averted over this four-year period if only child interventions directly linked to the FHCI are included (i.e. curative interventions for which user fees were previously charged). The estimate is even higher at between 18,200 and 18,400 child deaths averted if ITN ownership and vaccinations are included (i.e. interventions that more under-fives receive because of increased health facility utilisation but that were actually already free).

The cost per life year saved of the FHCI is between US\$ 420 and US\$ 445 (Table 3)

Table 3). This estimate uses the marginal cost, including the increase in all donor financing to RCH, and the more conservative assumptions for the maternal and newborn intervention coverage counterfactuals.

In 2013, the GDP per capita in Sierra Leone was US\$ 680 according to the World Bank's World Development Indicators. On these thresholds, our estimates of cost per life year saved indicate that the FHCI was a very cost-effective intervention. These findings, though modelled, are consistent with the estimates generated by our outcome analysis.

Sustainability

Sustainability was examined in a number of domains, including financial, political and institutional. Donors have provided between 60% and 80% of the new funding to the FHCI, outside of household financing. The main funder for the FHCI's direct costs is the UK Department for International Development (DFID), making up between 40% and 55% of new direct FHCI funding. Other important funding streams, such as PBF, are donor-dependent. These will only be sustainable with a mix of continued donor funding, large reprioritisation of government spending for health, additional resource mobilisation strategies and improved efficiency (including strengthening of public financial management (PFM) and bringing more donor funding on-budget). Apart from some DFID and Global Fund support to salaries through budget support, much of the external financing in the sector is off-budget and outside public control.

The changing composition of expenditure raises some concerns for sustainability, particularly in relation to expenditure on salaries, which has increased from 26% of the health budget in 2009 to 49% in 2010 and 60% in 2013. While this remains within the international range for expenditure on salaries, it is on the high side and the trend cannot continue. Over the period, there has been a proportional reduction in expenditure on goods and service, and capital expenditure remains a small part of the budget (2% in 2013, though this was higher at 10% in 2010 and 16% in 2011, correlating with FHCI facility investments). In the last three years, foreign financing capital expenditure has made up over 95% of total budgeted capital expenditure.

Other areas of concern in relation to sustainability include the dependence on short-term external technical assistance for some of the reforms described under the pillars. While this was effective in bringing in changes quickly, the concern is that momentum has slowed as these 'enablers' pull out, with the MoHS pursuing multiple priorities with limited staff.

Political commitment to the FHCI remains strong – the policy is still a presidential flagship programme and there is strong public demand and expectation, such that reversing the policy would be extremely problematic. However, new areas of emphasis in the post-Ebola period raise the risk that improving and deepening the FHCI could be neglected. In addition, longer-term institutional challenges remain, such as establishing an effective new National Pharmaceutical Procurement Agency (NPPU), as well as strengthening the MoHS capacity overall.

The fiscal space analysis found that without a reprioritised focus on domestic FHCI financing the financing gap would grow to 66 million USD by 2025. This would mean the FHCI program was underfunded by an amount equivalent to 0.6% of GDP. However, policy areas were identified to improve the sustainability outlook for the FHCI. First, long term rises in budget allocation to FHCI should be considered now and implemented gradually for the impact to be felt post-2020 (when donor funds may reduce). Second, medium term earmarked taxes and efficiency savings can be greatly beneficial and should be further researched, planned and implemented for their introduction in the near term (before economic growth can support greater budgetary allocation to FHCI). Third, the analysis suggests continuation of external donor support is essential to

continue to deliver FHCI services in an effective manner throughout the country. Sierra Leone clearly continues to require external support before it can transition to a self-sustaining health system. If this does not transpire the improvements in health outcomes Sierra Leone has achieved in recent years will be at risk.

Discussion and conclusion

Despite the difficulties with data and counterfactuals, we can say with confidence that the FHCI responded to a clear need in Sierra Leone, was well designed to bring about needed changes in the health system to deliver services to the target beneficiaries (under-fives, pregnant women and lactating mothers), and did indeed bring funds and momentum to produce some important systemic reforms. Underlying this achievement was strong political will, which has been sustained, enhanced donor cooperation, the deployment of supportive technical assistance, and consensus among stakeholders that the FHCI was significant and worth supporting. However, weaknesses in implementation have been evident in a number of core areas, such as drugs supply.

We conclude with reasonable confidence that the FHCI was one important factor contributing to improvements in coverage and equity of coverage of essential services for mothers and children. Other important contributors have probably been the other RMNCH investments that would have continued in the absence of the FHCI and broader economic changes. Clearly Ebola in 2014/15 also plays a major role in eroding previous gains.

Whether the FHCI contribution fed through into improved health is less clear from the data, although there was a very sharp drop in under-five mortality associated with the start of the initiative. Modelled cost-effectiveness is high. However, it is important that efforts are made to monitor and very likely improve the quality of care provided in public facilities. In addition, there needs to be continued efforts to overcome residual barriers, including lack of transport and socio-cultural barriers, to ensure gains are fairly distributed. On the supply side, efforts to improve the economy and efficiency of key resources – especially staffing and drugs – will be critical, as will addressing some of the harder-to-reach underlying systemic challenges, such as strengthening the MoHS and the devolved health functions at district level and improving public financial management. The sustainability of the FHCI is not assured without such a focus and increased public investment in health care in general. This requires the efforts of all stakeholders, including the development partners, to enhance performance and accountability in the sector.

It is instructive to compare the FHCI with similar policies adopted in post-conflict countries in Africa, such as Burundi, and with neighbours such as Ghana. Both have prioritised free care for mothers and under-fives over the past decade. In the case of Burundi, like Sierra Leone, it used PBF funding to replace resources lost at facility level, with some success (at least until recent unrest), although the policy has not been systematically evaluated¹⁸. In the case of Ghana, the use of a VAT levy to support the National Health Insurance Scheme enabled free care to be extended to all pregnant women in 2008¹⁹. This provides some insights for Sierra Leone as it considers future financing options, though Ghana as a middle-income country is in a somewhat different position to Sierra Leone.

What Sierra Leone attempted was more ambitious than both of those countries, in that it did not approach fee exemption as a ‘vertical programme’ focused solely on finance but understood that, for fee exemption to work, the whole health system had to be upgraded. This ambition, the relatively short preparation period (four months from announcement to implementation) and the weak starting point are part of the context in which our evaluation findings have to be situated, along with the subsequent shock of the Ebola epidemic. Our findings have relevance also for neighbours – for example, Burkina Faso, which in March 2016 announced free care for pregnant women and children under five¹. They highlight the potential contribution of a policy shift

towards free care as a catalyst for tackling fundamental health system challenges, as well as the huge commitment that is required to successfully pursue and maintain these gains.

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Competing interests

All authors state that they have no competing interests.

Figure 1: Evaluation Theory of Change

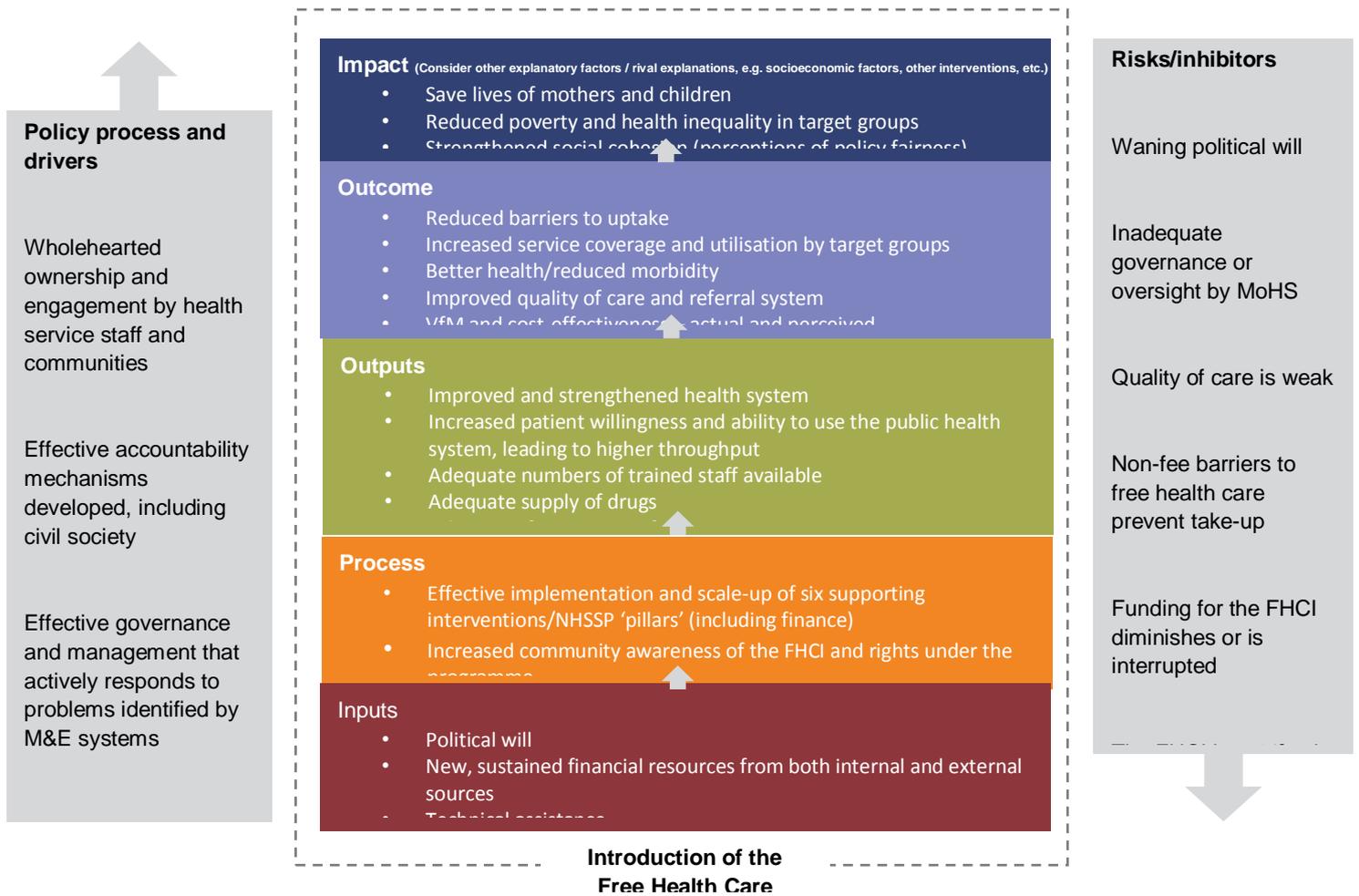


Figure 2 Under-five mortality in Sierra Leone, 2000-2015

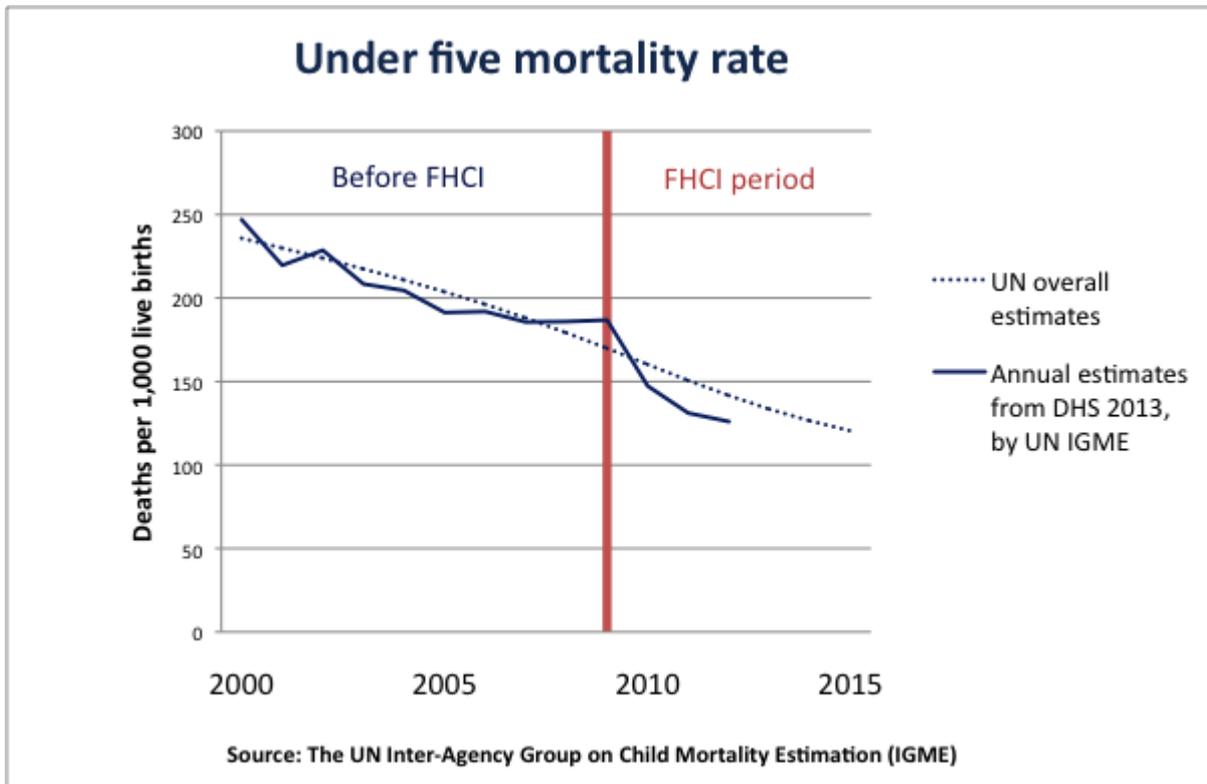


Figure 3 Under-five consultations per month, Sierra Leone, 2009-14

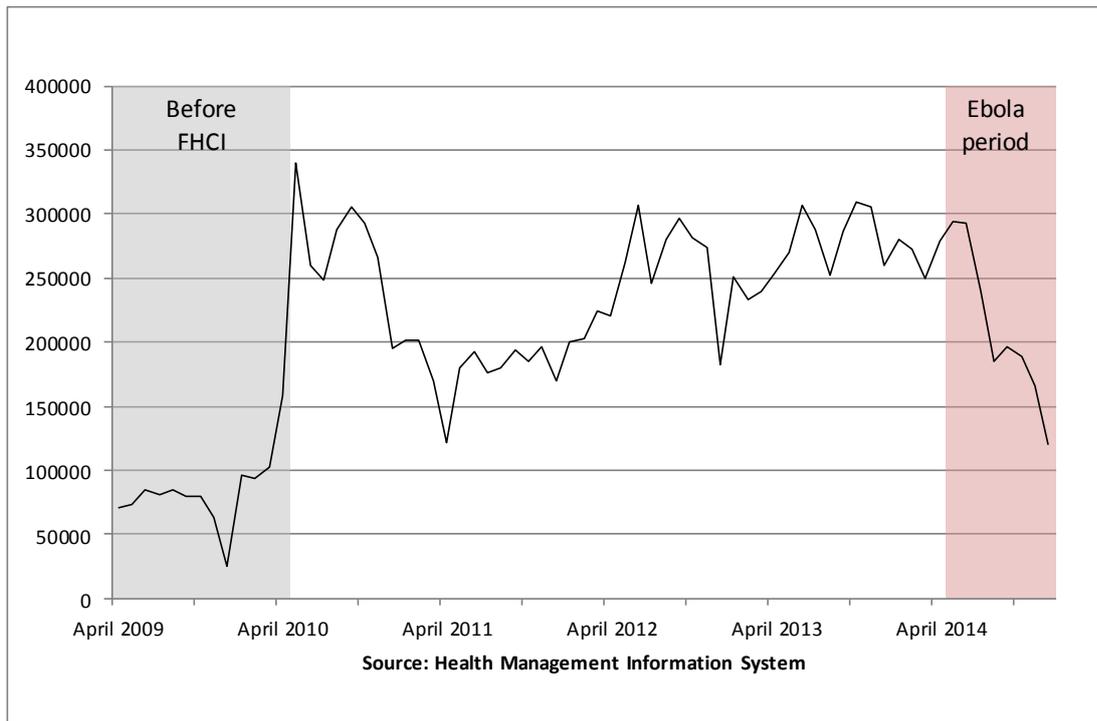


Table 1: Distribution of FGDs by participant category, district and region

Region	District	Young people (18–24yrs)	Adult females (25+yrs)	Adult male (25+yrs)	Community leaders	Total
West	Western Area	3	3	3	3	12
East	Kono	3	3	3	3	12
North	Koinadugu	3	3	3	3	12
South	Bo	3	3	3	3	12
Total FGDs		12	12	12	12	48
Total participants		90	85	87	89	351

Source: ¹³**Table 2: Type and distribution of district interviews**

	Bo	Koinadugu	Kono	Western Area
Local council	1	1	1	1
District Health Management Team (DHMT)	1	1	2	1
Hospital	2	1	1	2
Community Health Post (CHP)	1	2	1	2
Community Health Centre (CHC)	4	3	2	2
Maternal and Child Health (MCH) Post		2	2	1
Civil society	1	1	1	
Drug store			1	
Total: 41	10	11	11	9

Table 3 Cost effectiveness estimates for FHCI (2010-13)

	Lives saved	Life years saved
Newborn	6,300 – 7,600	239,400 – 270,100
Child	13,600 – 13,800	288,300 – 290,700
Maternal	1,500 – 1,600	31,400 – 35,800
Marginal effects (A)	561,500 – 594,200 life years saved	
Marginal costs (B)	249.56m US\$	
Cost per life year saved (=B/A)	US\$ 420 – 445	

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Supplementary data: FHCI evaluation matrix

Stage in results chain	Research question	Indicator	Methods	Data source
INPUTS	Was there relevant, effective and sustained technical assistance to support capacity of the implementation of the FHCI over the period?	Type and volume of technical assistance (assess at episodic points over the period). Qualitative assessment of relevance and quality of technical assistance by stakeholders.	Document review + KIIs.	MoHS (including Donor Liaison Office)
	To what extent was there 'political will' supporting the FHCI and what contribution/role did it play over time?	Qualitative assessment of changing political support.	Document review + KIIs	Members of the Parliamentary Health Committee and State House
	To what extent did the FHCI contribute to new resources for the target groups and the wider sector (by internal and external actors)?	- Marginal changes in total public expenditure on health care in Sierra Leone from 2010 onwards. - Marginal changes in household expenditure on health care in Sierra Leone from 2010 onwards.	- Comparison of public health expenditure post-FHCI with what it would have been if pre-FHCI trend had continued. - ReBUILD analysis of OOP expenditure using a regression discontinuity design.	- NHA and government budgets - Living Standards Survey
	Did the FHCI achieve economy?	- Unit costs of key inputs, such as drugs and salaries. - Staff pay-to-GDP per capita ratio. - Cost per working hour and cost per patient across different professional groups.	Trend analysis and/or benchmarking if appropriate and feasible.	- UNICEF for drugs data - Living Standards Survey for HRH data

Stage in results chain	Research question	Indicator	Methods	Data source
PROCESS	To what extent was there effective implementation and scale-up of six key intervention areas (i.e. NHSSP pillar areas, including finance), and specifically (see below):	<ul style="list-style-type: none"> - What were the challenges prior to the FHCI? - What changes did the FHCI bring? - How effective were they? - What other independent developments contributed to change in this domain? - What challenges remain? 	Qualitative research: <ul style="list-style-type: none"> - Documentary review - KIIs 	
	To what extent was the community aware of the FHCI?	<ul style="list-style-type: none"> - Awareness of right to free care for specific population groups, including understanding of which components are exempted and which not 	Analysis of trends in awareness indicators. Thematic analysis of qualitative sources.	HFAC surveys FGDs
	How and why has the FHCI changed target users' health-seeking, attitudes and involvement with health services?	Community confidence in public health system and willingness to use it. Community involvement in health services, e.g. via health facility management committees – increased or decreased?	Health facility 'exit' surveys, FGDs	ReBUILD interviews with households, FGDs HFAC data (uses structured questionnaire), KIIs
	Did the FHCI achieve efficiency?	Qualitative assessment of processes of resource management.	Qualitative research: <ul style="list-style-type: none"> - Document review - KIIs 	
	Pillar 1: Drugs Continuous availability of drugs and other essential commodities	Availability of funding Timely and appropriate	MoHS records: PET forms UN records	The NPPU is expected to take over this function from UNICEF as soon as it is established. Crown Agents have been identified for this purpose. This is monitored through the CHANNEL

		<p>external purchasing</p> <p>Effective internal distribution</p> <p>Delivery of drugs and supplies matches specified need</p>	<p>UNICEF records</p> <p>MoHS records</p> <p>MoHS records: stock issues and reception reports.</p>	<p>software and supported by CSOs, e.g. HFAC, whose representatives are present in government health facilities.</p> <p>KIIs and document review.</p>
	<p>Pillar 2: HRH</p> <p>How did the FHCI affect availability of health workers?</p>	<p>2008–13:</p> <p>Changes to staff numbers, type and distribution, by level of system and district.</p> <p>Changes to percentage of posts unfilled, by type and district post.</p> <p>Changes to percentage of absentee staff, by type and district.</p> <p>Changes to delays in getting on to payroll.</p> <p>Changes to numbers of ghost workers and volunteers and to processes of recruitment and management.</p>	<p>Calculate trends over time in posts, staff numbers and vacancies (reviewed against guidance on required staffing levels), and exploration of patterns of staff transfers (e.g. rural-to-urban shifts), disaggregated by district if possible.</p> <p>Thematic analysis of qualitative information: HR Payroll, MoHS, Booz & Co report.</p> <p>Human Resources Management Office (HRMO)</p> <p>HRMO – reports on absenteeism</p> <p>KIIs</p>	<p>The first three indicators should be available from routine data within the MoHS.</p> <p>This should be added to KIIs conducted by the evaluation team.</p> <p>The ReBUILD survey and in-depth interviews with health workers can be mined for information relevant to the FHCI. The tools are cross-sectional but have a retrospective component.</p> <p>We can also draw on other studies, such as the DFID evaluation of health worker pay uplift (2012).</p>

			ReBUILD survey	
			Health for All exit interviews and research	
	<p>Pillar 3: Governance</p> <p>To what extent was there country ownership of FHCI implementation – and what contribution did it make?</p>	<p>Signalled by:</p> <ul style="list-style-type: none"> - Function of COMPACT 2011 - Government responsiveness - Trends in percentage of public spend on the FHCI 	<p>Documentary analysis</p> <p>KIIs</p> <p>Financial plots/summaries</p>	<p>Health Sector Review meetings</p> <p>HMIS</p> <p>Government and donor informants</p> <p>GoSL financial data</p>
	<p>How effective was governance (i.e. in terms of responsiveness, accountability, learning lessons)?</p>	<ul style="list-style-type: none"> - Management response to problems identified - Functioning of governance structure/system 	<p>Documentary analysis</p> <p>KIIs</p>	<p>Annual health sector reviews, COMPACT agreement, etc.</p> <p>Key stakeholders</p>
	<p>Pillar 4: Communication</p> <p>Has there been effective information, education and communication to stimulate demand?</p>	<p>An effective publicity programme in place.</p> <p>Media support to help disseminate the publicity.</p> <p>General public have high levels of FHCI awareness, and how it affects them.</p> <p>Effective complaints systems in place for when the programme fails in its stated</p>	<p>Document review/KIIs</p> <p>Secondary data analysis</p> <p>Community research – thematic analysis</p>	<p>Appraisal of the communication strategy for launch and rollout of the FHCI, MoHS 2010.</p> <p>NGO surveys of awareness post-FHCI.</p> <p>Health for All exit interviews and research (e.g. patient satisfaction of users).</p> <p>ReBUILD in-depth interviews.</p>

		objectives.		FGDs. MoHS call centre records.
	<p>Pillar 5: Infrastructure</p> <p>Was infrastructure adequate to offer services to the target population?</p>	<p>Physical buildings are ‘fit for purpose’.</p> <p>Adequacy of utilities (lighting, electricity, water, sanitation, etc.).</p> <p>Furniture and other large equipment, e.g. refrigerators, beds, etc.</p> <p>Ambulances (availability).</p> <p>Proportion of health facilities providing EmONC services.</p>	KIIs/document review	<p>DHIS</p> <p>HFAC data</p> <p>FIT reports</p> <p>EC/UNICEF programme</p> <p>AfDB</p> <p>AMDD assessment?</p>
	<p>Pillar 6: M&E</p> <p>What M&E framework was developed and was this appropriate?</p> <p>What M&E was undertaken?</p> <p>How has the M&E been used to assess progress and shape the FHCI’s development?</p> <p>How relevant has the M&E work been?</p> <p>Is the M&E system working and how has it or should it be developed to make it more effective?</p>	<p>Timeliness</p> <p>Reliability</p> <p>Consistency (across time and space)</p> <p>Coverage</p> <p>Policy relevance</p>	<p>Review of Working Group terms of reference and minutes</p> <p>Assessment of M&E framework</p> <p>Assessment of delivery of M&E against framework</p> <p>Assessment of use of M&E system and its impact</p> <p>KIIs/document review</p>	<p>HMIS data</p> <p>HFAC data, for triangulation</p> <p>NGO services</p> <p>Key informants</p>

		Levels of public trust		
	<p>Other contributory factors</p> <p>What other major contextual changes have occurred, independent of the FHCI, which may have influenced the outputs, outcomes and impacts documented below?</p>	<p>Economic changes, affecting family expenditures and ability to pay for health.</p> <p>Disease outbreaks and natural shocks.</p> <p>Major investments in other sectors, e.g. roads, affecting access.</p> <p>Political changes.</p> <p>Health sector investments decoupled from FHCI.</p>	<p>Document review</p> <p>KII</p>	<p>Government economic reports</p> <p>Media reports</p> <p>Budget analysis</p>

Stage in results chain	Research question	Indicator	Methods	Data source
OUTPUTS	Was there an adequate and reliable supply of drugs over time?	Percentage of drug stock-outs in a specified period – tracked over time	- Trends over time (disaggregated at district level)	<p>HMIS</p> <p>HFAC data</p> <p>GoSL service</p> <p>Availability and readiness report (SARA, 2011)</p> <p>Assessment reports</p>

Stage in results chain	Research question	Indicator	Methods	Data source
				LMIS
	Have more patients been treated as a consequence of the FHCI, and if so to what extent?	Patient throughput	<ul style="list-style-type: none"> - Calculate throughput by target groups (pregnant women, lactating mothers, children under five) by service level by region and district - Sub-analyses: By area of care (e.g. ANC, supervised deliveries, PNC, caesareans); By disease area (malaria, diarrhoea, malnutrition, ARI), contraceptive uptake 	HMIS HFAC data DHS/MICS ReBUILD survey data analysis
	Are adequate numbers of health staff available and performing adequately to enable the delivery of FHCI-related services?	Changes to pay and motivation of staff Staff views on effects of the FHCI on their work Changes to informal charging by health workers Perceptions of quality of care by patients Measures of technical quality of care by staff	<ul style="list-style-type: none"> - Calculate trends over time in posts, staff numbers and vacancies (reviewed against guidance on required staffing levels) and exploration of patterns of staff transfers (e.g. rural-to-urban shifts), disaggregated by district if possible 	MoHS payroll data HRMO ReBUILD in-depth interviews HFAC data Fred Martineau PhD Absenteeism reports KIIs Technical measures still outstanding (looking for data sources)

Stage in results chain	Research question	Indicator	Methods	Data source
OUTPUTS	To what extent are there increased levels of health finance (amount, regularity, flexibility) to support the FHCI?	Volume, regularity and flexibility of fund disbursement at service delivery level	<ul style="list-style-type: none"> - Trend analyses, overall and by district - KIIs 	<ul style="list-style-type: none"> - Budget tracking survey (by Save the Children) - Key informants (e.g. facility staff, DHMTs, central MoHS, etc.) - Local government finance department
	To what extent is there a strengthened and functioning referral system and to what extent has the FHCI contributed to this?	<p>Availability of ambulances, fuel supply, maintenance schedule</p> <p>Changed community awareness of danger signs and support for emergency transport</p>	<p>Descriptive data analyses and trends over time</p> <p>Qualitative analysis</p>	<p>LMIS</p> <p>FGDs & district interviews</p>

Stage in Results chain	Research question	Indicator	Methods	Data source
OUTCOMES	Has the FHCI achieved improved service coverage and equity for the target groups (disaggregated by quintile and district)?	Tracking changes in coverage: (a) Tracer conditions: malaria, pneumonia, ANC and PNC, percentage of facility deliveries and caesarean sections disaggregated by quintile, by education level (b) Explore switching behaviour between the private and public sectors	Trends over time 1.1 Percentage of pregnant women attended at least four ANC visits 1.2 Proportion of institutional deliveries 1.3 Number of caesarean sections as a proportion of all deliveries in a year 1.4 Proportion of women and newborns receiving postnatal care in first 24–48 hours after birth at government facility 1.5 Pneumonia – % of children aged 0–59 months with suspected pneumonia received antibiotics 1.6 Malaria – % of children aged 0–59 months diagnosed with malaria and treated with ACT	DHS, MICS ReBUILD survey analysis

	<p>Are there reduced barriers to service uptake (affordability, transport, attitudes)? Have the main barriers been addressed? What substantial barriers remain from users' perspectives?</p>	<p>Changes to affordability</p> <p>Indicators for physical access and how these have changed</p> <p>Altered health-seeking behaviour, including for vulnerable sub-groups, e.g. adolescents</p> <ul style="list-style-type: none"> -percentage seeking care for sick children -change in delivery practices -reduction in informal care-seeking 	<p>Document review</p> <p>Analysis of secondary data</p>	<p>DHS + ReBUILD LSS analysis; 2008 OPM study for baseline figures</p> <p>FGDs</p> <p>National Service Delivery Perception Survey</p> <p>ReBUILD qualitative interviews</p>
	<p>To what extent has the FHCI contributed to strengthening social cohesion?</p>	<p>Defined as trust in public institutions, social capital and solidarity, perceptions of policy fairness</p>	<p>Qualitative analysis</p>	<p>FGDs</p> <p>Secondary studies /documents/KIIs</p>
	<p>Improved quality of care</p>	<p>Proportion of deliveries by SBAs</p> <p>Proportion of mothers receiving parenteral oxytocin or misoprostol after delivery as part of AMTSL/adherence to third stage management protocol</p> <p>CFR for PPH</p> <p>Proportion of women with obstetric complications treated in EmONC facilities</p> <p>Proportion of newborns breastfed within one hour of birth (facility)</p> <p>% of children aged 0–59 months with watery diarrhoea treated with ORS/zinc</p>		
	<p>Improved /strengthened health system</p>	<p>This is a product of all other domains and spans the entire results chain</p>		

Stage in results chain	Research question	Indicator	Methods	Data source
IMPACT	Has the FHCI contributed to saving lives in target groups? If so, how and to what extent?	Reduced MMR, neonatal, infant and child mortality rates	Pre/post comparison adjusting for confounders Explore use of LiST to model impact of changing coverage of key interventions	DHS MICS INGO sources
	Did the FHCI achieve cost-effectiveness?	- Incremental cost-effectiveness ratio - Broader effects on and perceptions of communities - Broader health system effects	Calculated from marginal effect data (in terms of lives saved) and marginal cost data (in terms of public and household expenditure on health) - Qualitative community research - KIIs and document review	- NHAs/ government budgets for cost data - DHS and/or HMIS and LiST for effect data (modelling)
	Has the FHCI contributed to reducing morbidity in target groups? If so, how and to what extent?	Lower prevalence of tracer conditions in target groups Malaria Pneumonia PPH Neonatal tetanus Child vaccine-preventable conditions	Pre/post comparison adjusting for confounders	DHS MICS

	Has the FHCI contributed to reduction in inequalities in health spending across districts, and to what extent?	Explored through disaggregated analysis of public health expenditure across districts over the period, judged against population and need, as well as changes to uptake	Changes in values over time	Geographically disaggregated data on expenditure and utilisation
	Has the FHCI contributed to reductions in health inequalities among target groups, and to what extent?	Explored through disaggregated analysis of mortality and morbidity	Trend analysis pre/post	DHS; HMIS
	Has the FHCI contributed to reductions in impoverishment /poverty reduction – how and to what extent?	Changes in health-related expenditure by quintile and different groups (mothers, under-fives)	Econometric analyses	Living Standards Surveys 2003/04 and 2011 – working with ReBUILD study
	How sustainable is the FHCI?	Analysis of composition of donor expenditure versus public expenditure on health over time Fiscal space analysis to assess future funding options Analysis of political, social and institutional support	Modelling of needs and resources going forward Thematic analysis of qualitative sources	Financial records; documentary analysis; KIIs
	Has the FHCI resulted in any unintended consequences?	For example: <ul style="list-style-type: none"> • Birth rates and uptake of contraception (including for teenagers) • Health seeking for other patient groups (general outpatient department) • Trends for preventive services • How has the FHCI impacted on health managers and facilities? • How has the FHCI impacted on private/informal services uptake? • Changes to informal payments 	Trend analyses Qualitative analysis	HMIS, DHS, MICS Peer reviewed + grey literature KIIs with stakeholders DHS FGDs Possible PhD thesis

ⁱ <http://lefaso.net/spip.php?article69912>