

Public Disclosure Authorized

Impact Evaluation of Service Delivery Grants to Improve Quality of Health Care Delivery in Cambodia

Baseline Study Report

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Health Equity and Quality Improvement Project (H-EQIP)



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Abbreviations

ANC	Antenatal Care
ART	Antiretroviral Therapy
CBHI	Community-Based Health Insurance
CMS	Central Medical Store
CPA	Complementary Package of Activities
CSES	Cambodian Socio-Economic Survey
DFAT	Australian Department of Foreign Affairs and Trade
DLI	Disbursement Linked Indicator
DPHI	Department of Planning and Health Information
FM	Finance Management
GNI	Gross National Income
HC	Health Center
HEF	Health Equity Fund
HEFO	Health Equity Fund Operator
H-EQIP	Health Equity and Quality Improvement Project
HMIS	Health Management Information System
HSSP	Health Sector Support Project
HSSP2	Second Health Sector Support Project
HW	Health Worker
IDPoor	Identification of Poor Households Program
IMCI	Integrated Management of Childhood Illness
IPD	Inpatient Departments
iSHPS	Integrated Social Health Protection Scheme
ISM	Implementation Support Mission
KfW	Kreditanstalt für Wiederaufbau
KHR	Khmer Riel
KOICA	Korea International Cooperation Agency
L2	Level 2 Quality Assessment
MDG	Millennium Development Goal
MEF	Ministry of Economy and Finance
MOH	Ministry of Health
MPA	Minimum Package of Activities
NCD	Noncommunicable Disease
NGO	Nongovernmental Organization
NSPPF	National Social Policy Protection Framework
NSSS	National Social Security System
NQEMP	National Quality Enhancement Monitoring Program
NQEMT	National Quality Enhancement Monitoring Tool
OD	Operational District
OOP	Out-of-Pocket
OPD	Outpatient Department
PAC	Priority Access Card
PBG	Performance-Based Service Delivery Grant
PCA	Payment Certification Agency
PHD	Provincial Health Department

PHRD	Japan Policy and Human Resources Development
PMRS	Patient Management and Registration System
PMTCT	Prevention of Mother to Child Transmission of HIV
PNC	Postnatal Care
PRH	Provincial Referral Hospital
QA	Quality Assurance
QOC	Quality of Care
RGC	Royal Government of Cambodia
RH	Referral Hospital
SCD	Systematic Country Diagnostic
SDG	Service Delivery Grant
SOA	Special Operating Agency
STI	Sexually Transmitted Infection
TBA	Traditional Birth Attendant
UHC	Universal Health Coverage
VHSG	Village Health Support Group

Executive Summary

Though structured as a ‘baseline report’ for the impact evaluation, the purpose of this report is two-fold: to provide an overview of the health system innovation in Cambodia that constituted the backdrop for the Health Equity and Quality Improvement Project (H-EQIP) and for the specific interventions which are being evaluated here; and to present the baseline findings of the Service Delivery Grants (SDG) impact evaluation. In the light of these two objectives, the report also includes a discussion and outlines some policy implications on these themes that are embedded in the closing chapter of the report.

A. Health System Innovation in Cambodia

The Cambodian economy had an average growth rate of 7.6 percent over the period 1994-2015, ranking sixth in the world. With strong economic growth, and a gross national income (GNI) per capita that more than tripled from US\$300 in 1994 to an estimated US\$1,070 in 2015, Cambodia entered the ranks of a lower middle-income economy. Poverty incidence under the national poverty line h decreased from 47.8 percent in 2007 to 13.5 percent in 2017. Regardless, there is high vulnerability to financial and weather shocks, including health episodes, with Cambodia ranking among the world’s top ten countries in terms of the share of out-of-pocket (OOP) health expenditure. Meanwhile, social protection schemes are in nascent stages, with Cambodia spending less than 0.1 percent of GDP on social assistance compared to the world average of 1.6 percent.

Health Equity and Quality Improvement Project (H-EQIP)

H-EQIP (2016-2021) is the current flagship project of the Cambodian Ministry of Health (MoH, #50) with cofinancing from the Governments of Australia, Germany and Korea, and the World Bank. Key shifts in H-EQIP design from its immediate predecessor (HSSP2), with an underlying focus on sustainability of financing and implementation for major health system initiatives, include: (i) mainstreaming implementation of project activities through Royal Government of Cambodia (RGC) systems; (ii) increasing funding flows to the subnational implementation level; (iii) building domestic capacity to take over project implementation support, information systems and monitoring roles; and (Wiseman, #34) enhancing the use of output-based payments through Health Equity Funds (HEF), performance-based financing through Service Delivery Grants (SDG), and Disbursement Linked Indicators (DLIs).

Operationally, the framework for quality improvement initiatives under H-EQIP includes the following:

- To provide additional, flexible financial resources for health facilities to improve the use and functionality of available infrastructure, and maintain availability of necessary supplies and consumables, through *fixed lump sum SDGs for all levels of the health system*.
- To measure and reward improvements in performance of health facilities, health workers’ knowledge and clinical skills, hygiene and infection control, availability of medicines and consumables through *performance-based SDGs for health facilities*.
- To improve performance of health facilities through *performance-based SDGs for supervisory levels*, to improve monitoring and supervision, introduce standardized assessments of performance, and reward coaching and other measures taken by supervisors.
- To improve the competencies and skills of health workers through pre-service as well as in-service training opportunities through *disbursement linked indicators*.
- To promote access and availability of services, especially in remote areas through necessary *augmentations to health infrastructure*.

- To improve health workers' morale, motivation and remuneration in a manner closely linked to their performance on quality, improved productivity and higher patient satisfaction through an *overall focus on results, performance and performance-linked payments*.

Health Equity Fund (HEF)

The HEF is a notable health financing system that purchases services from public health facilities on a pay-for-performance (output) basis (through a reimbursement of user fees on behalf of the poor) that has improved access to health services for the poor, leveraged quality improvements and provided a major source of flexible revenue within the health system. As of May 2015, the HEF system had reached nation-wide coverage to reach over 1,200 health facilities, including all Health Centers, all former District Hospitals, all Referral Hospitals and one of the eight National Hospitals. A further expansion to cover five more national hospitals was completed in mid-2018. The HEF system has grown from a series of small NGO-run pilots in the early 2000s to a government-owned nation-wide social health protection and health financing mechanism providing comprehensive coverage to about 3 million poor people in Cambodia. In light of the overall increase in health services utilization, the recent body of evidence indicates a growth in public health service utilization among HEF beneficiaries compared to those without the entitlement. Several challenges still exist, often arising from systematic factors that contribute to under-utilization among the poor, such as distance and low awareness of the HEF entitlement. Regardless, several studies suggest that the HEF system has made access to health care more affordable, and improved financial protection, especially for higher cost services.

Service Delivery Grant (SDG)

In 2008, the Cambodian MOH established special operating agencies (SOAs), either based in a provincial referral hospital (PRH) or in an operational district (OD) with the aim to increase utilization and quality of care in identified locations. This was part of an initiative to pay performance-related grants, or SDGs under an internal contract between MOH/Provincial Health Department (PHD) and the SOA. SOAs are designated organizational units with service delivery functions, which are granted some additional delegation of managerial authority and flexibility, jointly by the MOH and Ministry of Economy and Finance (MEF), under a sub-decree and other policy issuances, in return for stronger accountability for performance.

Under H-EQIP, the SOA and SDG system underwent a major revision. In the redesigned system, the payment of SDGs to health centers and hospitals is more closely linked to performance in the delivery of basic and comprehensive packages of services, such as critical reproductive, maternal, neonatal, child, and adolescent health services. The MOH SDG manual outlines the intended use for the fixed lump sum grant and performance-based grants (MoH, 2016 #50):

- Fixed Lump sum Grants are intended as a complement to the facility operational budget, to manage and implement direct spending for the purpose of promoting quality and equity in patient care.
- Performance-based Grants are intended to reward health facilities for quality performance and to reward OD and PHD offices and in particular certified assessors for conducting quality ex-ante assessment. Up to 80 percent of Performance-based Grants can be spent for staff incentives. At least 20 percent of Performance-based Grants are eligible for any other SDG-eligible expenditures.

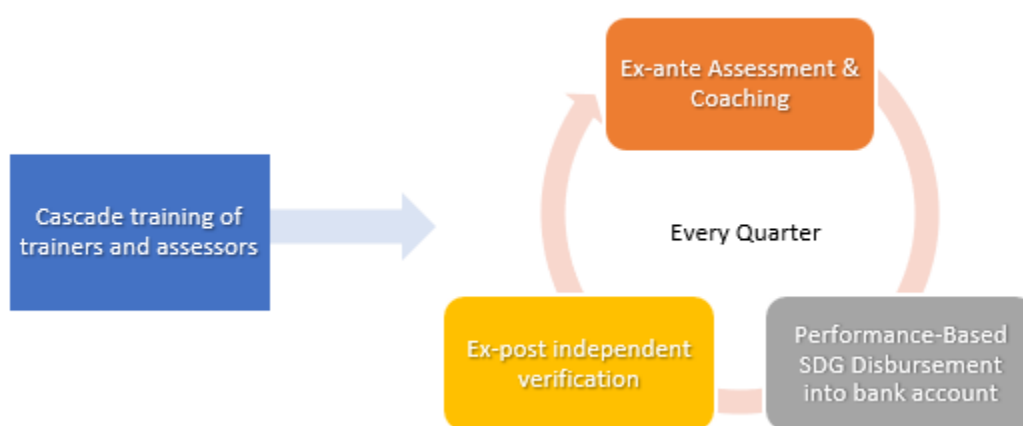
B. SDG Impact Evaluation: Baseline Study

The purpose of the SDG Impact Evaluation is to measure the impact – outputs and short-term outcomes – of the implementation of performance-based SDGs, which is in effect at three levels: PHD and OD

Offices, Referral Hospitals and Health Centers. Performance of these entities is measured by National Quality Enhancement Monitoring Tools (NQEMT), which are applied quarterly by certified assessors from the OD and PHD offices. These payments supplement the revised fixed lump sum SDG that complement health facilities’ existing operating budget.

The quality of health service delivery is expected to be positively reinforced by the quarterly quality assessment using NQEMT, leading to the regular disbursement and use of performance-based SDG. The baseline survey was conducted at the level of OD Offices, Health Centers and Households to measure the existing quality of health service delivery prior to the implementation of the intervention. The schematic in Figure E.1 outlines the theory of change by the SDG implementation, including the expected short-term outcomes¹.

Figure E.1 Schematic representation of the theory of change from SDG implementation in Cambodia



Expected Outcomes	
Supply	Demand
A. Improved monitoring and evaluation	A. Improved perceptions of quality of care by citizens
B. Improved managerial capacity and financial autonomy	B. Improved financial protection
C. Improved perceptions of quality of care by health worker	C. Increased utilization of public health facilities
D. Increased motivation and morale of health worker	
E. Improved health worker clinical competency	
F. Increased availability of health worker at health facilities	
G. Improved use and functionality of available infrastructure	
H. Increased availability of necessary supplies and consumables	
OD office Health Center Health Worker Exit	Exit Household
SDG Impact Evaluation Survey Instruments	

Methods

By focusing on the expected areas of impact, as outlined above, the impact evaluation aims to answer the following research questions:

1. Does the National Quality Enhancement Monitoring Program (NQEMP) at the levels of the operational district and health centers have an average impact?
2. Are the impacts of the intervention heterogeneous with regard to differences in the local context?

¹ The SDG results chain is outlined in **Annex A**

3. Does the intervention affect equity?

The SDG baseline quantitative survey was conducted from June to July 2016 (supply side) and September to November 2016 (demand side). The planned and completed samples are outlined in Table E.1.

Table E.1 Planned and completed samples across different units of observation

Unit of observation	Original plan	Completed
Operational district offices (across 23 provinces)	70	69
Health facilities (across 23 provinces)	140	140
Health workers (4 per facility)	560	546
Patient exit interviews (including four antenatal patients and four under-5-child patient caregivers in each health center)	1,120	1,053
Medical record review (4 records per facility)	560	560
Households (20 per facility catchment area, split HEF vs non-HEF)	2,800	2,474
Community (2 per operational district)	140	140

Synthesis of Findings from Existing Studies

In order to complement the baseline findings and to provide a more comprehensive view of the health system prior to the H-EQIP, two additional analyses were incorporated using the L2 quality assessment scores and HEF utilization survey results, both of which pertain to a period just prior to the launch of H-EQIP.

The L2 quality assessment scores were analyzed to measure any existing differences based on the SOA and HEF status, in the health center performance on clinical vignettes. In theory, being designated as an SOA does entail a different degree of investment and incentives, which would render these facilities different in terms of infrastructure, process and outcomes. The key finding of this analysis was that SOA and HEF Health Centers consistently scored better than non-SOA and non-HEF ones on average across all vignettes.

The key findings of the HEF utilization survey revealed that HEF beneficiaries and the near poor were very similar in most assets and wealth indicators, including monthly income, which was around US\$150 on average in both groups. But the near poor spent almost three times more than HEF beneficiaries during their last hospitalization. In addition, patients with a chronic illness were 43 percent more likely to use an HEF card for OPD care.

Baseline Study Findings

The report discusses the analysis of survey responses from seven different data collection instruments capturing both the supply and demand dimensions of the health system. The schematic in Figure E.2 outlines the contextual findings according to the three levels of impact analysis: OD office, health center and household. The results in the OD office and Health Center columns represent the supply-side context, outlining the key findings from the OD, health facility and health worker surveys, and partly

from the patient exit survey (focused on content of care); the results in the Household column represent the demand-side with the key findings from the community, household and maternal and child health surveys, and partly from the patient exit surveys (with a focus on patient opinion).

Figure E.2 Schematic representation of the key findings of the baseline study across three levels of impact analysis

OD Office	Health Center	Household
<ul style="list-style-type: none"> •47% of the ODs conduct monthly M&E of health centers; 34% quarterly •63% assessed the training needs, 63% organized in-service training, and 63% helped with career planning for staff at health centers •64% ODs set and awarded financial & non-financial incentives for OD staff •93% of the ODs prepared an annual budget for the 2015 fiscal year; 87% of the ODs monitored OD expenditures against the agreed budget •36% of the ODs reported having complete freedom on resource allocation; 10% no freedom at all •Expenditure on drugs accounted for the highest spending category at 26% of all budget expenditures •59% of OD directors think that the OD staff is highly motivated; 32% think the staff is motivated 	<ul style="list-style-type: none"> •50% of facilities owned a functioning computer; 44% had access to internet •27% disagreed or strongly disagreed on having enough authority to obtain the resources for the facility •Low satisfaction on quantity of medicine (54%) and equipment in facility (44%) •Satisfaction on salary was 37% •45% of health workers currently engaged in other economic activities as their secondary job •86% and 95% of total ANC patients received the measurement of weight and blood pressure, respectively •HEF patients received more laboratory services than non-HEF patients: blood sample (66% HEF, 27% non-HEF), urine sample (43% HEF, 8% non-HEF) •Almost all children received weight measurement; 13% HEF/9% non-HEF children received height measurement; 3% HEF/2% non-HEF children received upper arm circumference measurement 	<ul style="list-style-type: none"> •Lower than 60% of HEF household heads understood their benefits towards indirect cost exemption •34% of HEF cardholders at health centers reported being reimbursed some of the transport costs •The most accessible health center was on an average about 3 km away from the villages; the average distance to drug seller was 1km from the villages •83% of HEF holders visited OPD from a private health provider; 45% HEF holders visited IPD from a private health provider •49.4% of HEF households and 49.8% of non-HEF households sought care at pharmacy and drug seller at the most recent visit •94% of HEF households and 91% of non-HEF households expressed out-of-pocket expenditures on medicine (largely driven by expenditure incurred at private providers)

Discussion and Policy Implications

The impact evaluation serves the important objective of providing evidence of the effectiveness of the SDG program to the key stakeholders, and helps facilitate the achievement of H-EQIP objectives in conjunction with the broader health system elements by guiding policy dialogue.

- *Utilization of HEF system*

There are several persisting challenges that have been identified by the existing body of published evidence, and the emerging findings from the baseline survey, which suggest where future efforts at improving the program need to be directed. In particular, the competency and in some cases, also the attitude of providers at public facilities has been below expectations, which has led to underutilization of public health facilities. It is also increasingly clear that indirect costs are important barriers to access among the poorest members of the population, which have deterred HEF beneficiaries from seeking care at public health facilities. It appears that patients with chronic diseases have not been able to benefit from their HEF entitlements due to the service availability and competency issues around NCDs, as well as the inability of HEF to cover transport costs related to frequent outpatient visits.

On the positive side, HEFs and SDGs also seem to steadily produce a virtuous circle on facility volumes and perceived quality. This virtuous circle also results in the amplification of the utilization of health facilities thereby adding to the impact of these health financing instruments. As such, HEF expenditure has remained below 5 percent of the total public health expenditure in the country, even after nationwide rollout. This incremental performance-linked payment provides the much needed resources and incentives to create a significantly higher output from the underlying public health investments.

- *Quality of Care*

It is also evident that quality of care remained a large pending agenda at the time of the baseline survey. Early investments being made in improving facility infrastructure, amenities and supplies, using the fixed lump sum SDGs, are already beginning to reveal the enthusiasm and innovations that are being tried out by facilities. It was interesting to see examples where the small investments have created tools (such as newborn packs) that allow greater interaction opportunities with patients, which are being used for health promotion and counseling. Greater clarity on the exact modality and rules surrounding these funds, as sought and being progressively understood by the health facilities, would further help the health centers to use these grants to their advantage, for improved patient care. Quality is a key focus for the SDG system, and will remain so for this impact evaluation too.

- *Managerial Practices, Autonomy and Empowerment*

The baseline context shows that there was somewhat limited level of autonomy and satisfaction in the targeted areas for improvement at health center-level, such as the authority to manage resources. In what may well prove to be transformative and a game-changer in the Cambodian context, all 1200-odd health centers were opening their bank accounts to directly receive SDG funds electronically, around the time this baseline survey was being conducted - and so the impact of receiving this additional resource, in a timely manner, will be something to watch out for in future rounds of this study. The changing levels of empowerment and the changing revenue mix at health facilities and OD offices, most notably due to the implementation of performance-based SDG, HEF reforms, and reducing share of external funding, creates several favorable dynamics around equity and sustainability. Improving autonomy and motivation at health facilities is one of the expected impacts of the SDG intervention; refinement in these areas has already been captured via other means of early H-EQIP documentation.

- *Other Implications*

Cambodia's health system will need to rapidly address noncommunicable diseases and the continued burden of chronic malnutrition, as it faces an epidemiological transition. HEFs and SDGs may well become the platforms to bring about systemic capabilities for such an evolution of the system, and will remain an area for the impact evaluation to explore and document.

With considerably reduced outreach in recent years, driven by the changed resource context, there is an increasing need for stronger community links and outreach, especially to meet the needs of very remotely located communities. This will require changes in the institutional arrangements, finances, health workforce and information system. Going forward, the impact evaluation would provide insights toward the changing situations and roles of health institutions vis-à-vis community-based entities.

Ensuring equity is at the heart of the H-EQIP, transcending the highly intertwined and mutually reinforcing architecture of the SDG and HEF systems. In the impact evaluation, the household and patient exit surveys can be stratified by HEF status as well as other patient, individual and household characteristics, enabling comparisons of areas of impact through the equity lens. The OD and HF surveys capture essential aspects of the SDG and HEF interventions, which can again be stratified according to key characteristics to examine contextual factors that may hinder achieving the expected program outcomes. These will be invaluable pieces of information in guiding the current and future health policy in Cambodia, given the substantial efforts and resources that have been put into the evolution of these programs.

1. Introduction

1.1 Background and Genesis

The objective of this report is two-fold. It presents an overview of health systems reform in Cambodia and an analysis of the findings emanating from an impact evaluation baseline study undertaken by the pooled fund partners of the Health Equity and Quality Improvement Project (H-EQIP). The primary goal of H-EQIP is to improve the quality of health care services and financial protection for vulnerable groups. Chapter 1 provides the background and country context of H-EQIP, details of the project as well as a synthesis of the literature on what is already known about the Health Equity Fund (HEF) system and Service Delivery Grants (SDGs), the two key interventions supported under H-EQIP.

The impact evaluation measures outputs and short-term outcomes of the implementation of performance-based SDGs, which are a major component of H-EQIP. Performance-based SDGs under H-EQIP have been completely redesigned from the earlier version of the SDG program implemented under the Second Health Sector Support Project (HSSP2), the predecessor of H-EQIP. The conclusion of HSSP2 in June 2016, and the phased roll out of the redesigned SDG system from May 2017 onwards, have provided the opportunity to design a systematic impact evaluation. The baseline data collection was undertaken in the second half of 2016; this report tries to integrate the new knowledge from this baseline survey with the existing body of knowledge, to provide a deeper understanding of the context within which these health financing innovations have been rolled out in Cambodia.

1.2 Health Equity and Quality Improvement Project (H-EQIP)

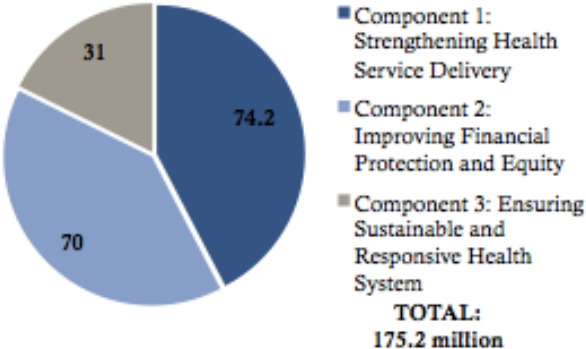
H-EQIP is the new flagship project of the Cambodian Ministry of Health (MoH, #50) with cofinancing from the Governments of Australia, Germany and Korea, and the World Bank. It builds upon the innovations and achievements of its predecessor projects, the Health Sector Support Project (HSSP) and the Second Health Sector Support Project (HSSP2); and in particular, consolidates and scales up proven, potentially transformative interventions such as the HEF system and SDGs. Key shifts in H-EQIP design from its immediate predecessor (HSSP2) include: (i) mainstreaming implementation of project activities through Royal Government of Cambodia (RGC) systems; (ii) increasing funding flows to the implementation level; (iii) building domestic capacity to take over project implementation support and monitoring; and introducing use of output-based payments through HEFs, performance-based financing through SDGs, and Disbursement Linked Indicators (DLIs). H-EQIP accelerates overall reforms in the health sector, improves financial protection for the poor and vulnerable groups and expands access and coverage of health services, while strengthening their quality and affordability, and creating sustainable government institutions for health care management.

Component 1 of H-EQIP (US\$74.2 million) focuses on Strengthening Health Service Delivery. This component invests in the redesigned SDGs, providing performance-based financing to different levels of the health system based on results achievement. A total of US\$34.2 million is provided by the Royal Government of Cambodia as the fixed component of SDGs, and an additional US\$40 million, is shared equally by the government and H-EQIP pooled fund partners (US\$20 million each). It includes SDGs for Health Centers (HCs), Referral Hospitals as well as for the supervisory levels - the Provincial Health Departments (PHDs) and Operational Districts (ODs), measuring and incentivizing their performance (**Figure 1.1**).

Component 2 (US\$70 million) focuses on Improving Financial Protection and Equity, and invests in further expanding the HEF system, increased domestic ownership and creating sustainable domestic institutional arrangements for managing HEFs. This component builds on the success of the home-grown HEF system, aiming to improve utilization by the poor and ensure sustainability by transferring implementation responsibilities to domestic institutions in a planned and progressive manner during the project implementation period. The newly created Payment Certification Agency (PCA) is expected to gradually enhance its capacity and skillsets to perform the HEF monitoring and payment verification roles, as well as manage the information system for HEFs.

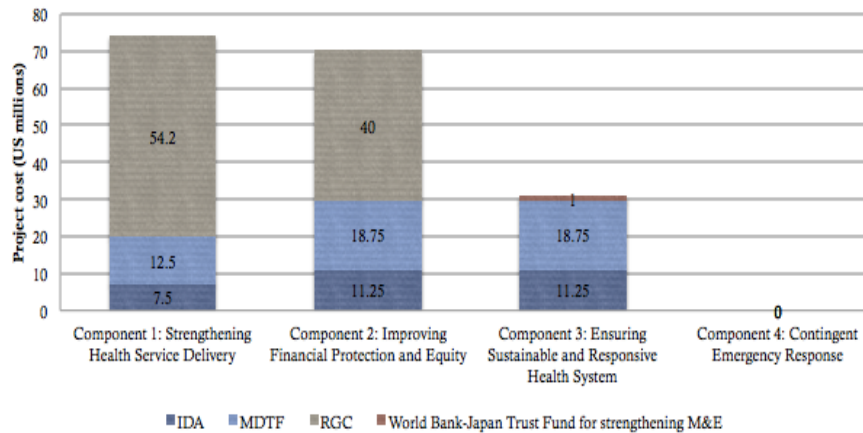
Component 3 (US\$31 million) focuses on Ensuring Sustainable and Responsive Health Systems. It uses results-based instruments, known as Disbursement Linked Indicators (DLIs) to improve supply-side readiness and strengthen health sector institutions, enhance the quality of pre-service and in-service training programs for health workers, equip health facilities to meet minimum standards for providing obstetric and neonatal care, enhance health service quality monitoring, improve timeliness of SDG and HEF payments and establish sustainable health service purchasing arrangements. This component also finances civil works identified in MOH’s civil works plan for 2016-2020, prioritizing investments in remote areas, and addressing concerns of patient safety and improvement of maternal and neonatal survival. Support to project management activities is also included in this component, including day-to-day coordination, administration, procurement, financial management, environmental and social safeguards management and monitoring and evaluation. A grant of US\$1 million from the World Bank-Government of Japan Policy and Human Resources Development trust funds provides complementary financing to this component focused on monitoring and evaluation activities (**Figure 1.2**).

Figure 1.1 H-EQIP Cost by Component (in US\$ million)



H-EQIP was approved by the World Bank Board of Executive Directors on May 19, 2016 and became effective on November 9, 2016 with a five-year duration, through June 2021.

Figure 1.2 H-EQIP Cost by Financing Sources (in US\$ million)



Operationally, the framework for quality improvement initiatives under H-EQIP includes the following:

- To provide additional, flexible financial resources to health facilities to improve the use and functionality of available infrastructure, and maintain availability of necessary supplies and consumables, through *fixed lump sum SDGs for all levels of the health system*.
- To measure and reward improvements in performance of health facilities, health workers' knowledge and clinical skills, hygiene and infection control, availability of medicines and consumables, through *performance-based SDGs for health facilities*.
- To improve performance of health facilities through *performance-based SDGs for supervisory levels*, to improve monitoring and supervision, introduce standardized assessments of performance, and reward coaching and other measures taken by supervisors.
- To improve the competencies and skills of health workers through pre-service as well as in-service training opportunities through *disbursement linked indicators*.
- To promote access and availability of services, especially in remote areas through *necessary augmentations to health infrastructure*.
- To improve health workers' morale, motivation and remuneration in a manner closely linked to their performance on quality, improved productivity and higher patient satisfaction through an *overall focus on results, performance and performance-linked payments*.

To understand the overall impact of H-EQIP in general, and of performance-based SDGs in particular, would need a combination of administrative data and survey data. Administrative data would include the periodical objective assessment and scoring of health facilities, deviations observed between original ex-ante assessment scores and cross-verification scores, and how these triangulate with datasets from HEF and the routine health information system data. The remaining information needs for the impact evaluation are being met using specially commissioned surveys at the baseline, midline and endline points, as detailed in Chapter 2.

1.3 Country and Sector Context

Due to rapid and sustained growth, Cambodia has become one of the world's leaders in economic growth, poverty reduction and shared prosperity. Cambodia had an average growth rate of 7.6 percent over the period 1994-2015, ranking sixth in the world. With strong economic growth, and a gross

national income (GNI) per capita that more than tripled from US\$300 in 1994 to an estimated US\$1,070 in 2015, Cambodia entered the ranks of a lower middle-income economy.

In addition to strong economic growth, Cambodia has achieved dramatic poverty reduction. Poverty incidence under the national poverty line has decreased from 47.8 percent in 2007 to 13.5 percent in 2017. From 2004 to 2007, poverty reduction was driven by the movement of people out of agriculture and into the fast-growing garment and services sectors. Poverty reduction then became particularly dramatic during the 2007-2009 period, at the peak of the agriculture commodity boom, and in a context of expansion in cultivated area, when poverty declined by 25 percentage points and 3.3 million people escaped poverty.

However, Cambodian households face a high degree of economic vulnerability. According to the 2017 Systematic Country Diagnostic (SCD), most Cambodians not in extreme poverty are either moderately poor or vulnerable according to international standards. Two-thirds of the population lives under US\$5.50 per day PPP. There is high vulnerability to financial and weather shocks, with Cambodia ranking among the world's top ten countries in terms of out-of-pocket (OOP) health expenditure. Meanwhile, social protection schemes are in nascent stages, with Cambodia spending less than 0.1 percent of GDP on social assistance compared to the world average of 1.6 percent.

Cambodia remains a leading example of how a low-income country can quickly advance toward health goals; progress and innovations in health financing and in service delivery contributed to the achievement of all health-related Millennium Development Goals (MDG). The government is improving access to care through a larger health workforce, as well as by improving the infrastructure of health facilities. There are continuing efforts to improve the quality of health services, which encompass pre-service training, in-service training, an ambitious performance-based financing program, and efforts to strengthen regulation.

The National Social Policy Protection Framework (NSPPF) 2016–2025, an inter-ministerial initiative, outlines the country's direction toward Universal Health Coverage (UHC). Ongoing public financial management reforms include the implementation of a Financial Management Information System (FMIS), program-based budgeting in the health sector, and increasing levels of financial autonomy and greater funding for peripheral health facilities. Health coverage is expected to expand, with social health insurance for the private formal sector aiming to cover 1.2 million people through a mandatory contributory scheme. A new civil servants' scheme (covering 235,000 beneficiaries) and a plan for covering informal workers have recently been launched (**Table 1.1**).

So far, there has been notable improvement in the maternal and child health outcomes. The maternal mortality ratio decreased from 442 per 100,000 live births in 2005 to 170 per 100,000 live births in 2014, and under-5 mortality rate decreased from 83 per 1,000 live births in 2000 to 35 per 1,000 live births in 2014. Consequently, in 2010 the MDG Goals Progress Index was estimated that ranked Cambodia as the fifth best performer out of 76 countries. Strong political commitment - combined with a willingness to innovate - yielded significant improvements in service delivery including dramatic increase in facility-based deliveries (10 percent in 2000 to 83 percent in 2014), uptake of antenatal care, and coverage of other maternal and child health services.

Table 1.1 Human Development Indicators, Cambodia (2000-2014)

Indicator	2000	2014
Total Population	12,152,354	15,270,790
Total Fertility Rate	3.8	2.6
Life expectancy	58	68
Infant mortality rate	80	29
Neonatal mortality rate	36	17
Maternal mortality rate	437	170

Source: WDI, 2017

Despite these improvements, there remains the need for stronger efforts to reduce inequities in care due to geography and income. For example, reduction in child mortality since 2005 was twice as high in urban areas compared to rural, and higher for the richest income quintiles compared to the poorest. Child mortality has remained unchanged at 3.3 times higher for the poorest quintile compared to the wealthiest quintile since 2005 and three times higher for rural children compared to urban children. Inequities in utilization of health services accounted for part of the inequities in health outcomes. Moreover, health spending is a major source of debt and impoverishment for the poor and near-poor, and the chronically ill. Despite an overall decline in health spending and catastrophic spending as a percentage of income in recent years due largely to rising incomes, an estimated 2 percent of Cambodians fell into poverty in 2011 due to health costs. Health spending remains a significant burden on the poor, with about 18 percent incurring debt because of health expenses.

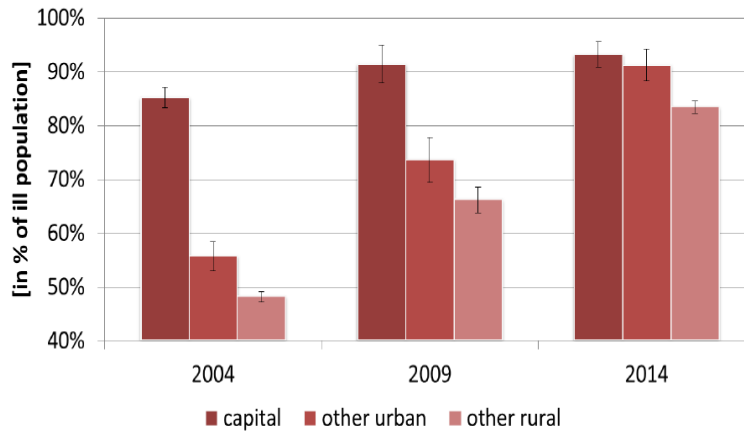
The three rounds of Cambodian Socio-Economic Surveys (CSES) undertaken between 2004 and 2014 provide a robust, survey-based evidence of how access to health care for the most vulnerable groups in 2014 was remarkably different from that in 2004. This is likely to have been caused by multiple initiatives that were ongoing in this period, but HEF and Special Operating Agencies or SOAs are likely to have been the most significant health financing interventions in that period, creating this observed impact. An analysis of the surveys reveals a two-fold increase in the proportion of care-seeking behavior at public health facilities during the ten-year period (**Table 1.2**). While this may be notable in itself, a similar trend was seen at private health facilities during the same period, indicating the overall increase in utilization of health care.

Table 1. 2 Proportion of Households Seeking Medical Care (2004, 2009, 2014)

Sought medical care	2004	2009	2014
At public health facility	10.7	18.4	23.4
At private provider	31.9	56.9	64.1

From 2004 to 2014, the equity gap associated with access to care was substantially reduced, as those residing in other urban and rural areas had more access when ill (**Figure 1.3**). There was approximately a two-fold increase in the proportion of those residing in rural areas seeking care and a 1.5-fold increase among those in other urban areas. By 2014, all populations had higher than 80 percent access rate to care regardless of the place of residence, indicating more equitable access to medical care across the country.

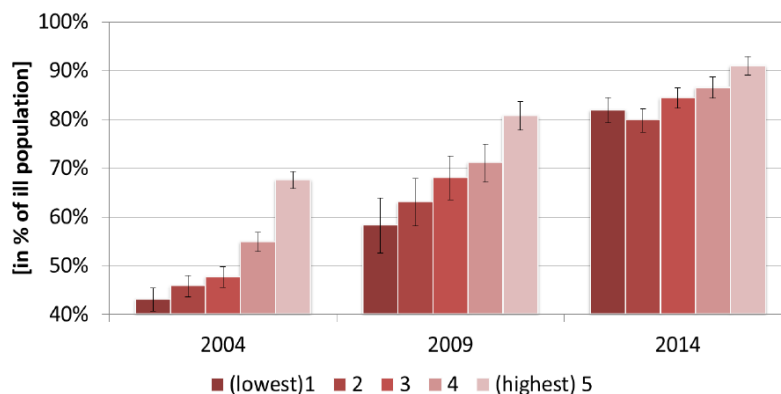
Figure 1.3 Access to Medical Care When Ill by Three Regional Groups (2004, 2009, 2014)



Source: Antunes et al., 2018; GIZ, 2014.

Similarly, there was a significant improvement in access for the poorest populations groups. Progressive surveys indicate a much higher access to care in 2014, across all consumption quintiles (Figure 1.4). In 2004, access to medical care was highly segregated according to economic status of households; only less than 45 percent of those at the lowest consumption quintile had access to medical care whereas more than 65 percent of those at the highest consumption quintile had access. By 2014, more than 80 percent of the lowest quintile group had access to care, and the difference between the proportion of ill population at the lowest quintile accessing care and that at the highest quintile had also narrowed down considerably, to approximately 10 percent in 2014 compared to 25 percent in 2004.

Figure 1.4 Proportion of Access to Medical Care by Consumption Quintile (2004, 2009, 2014)

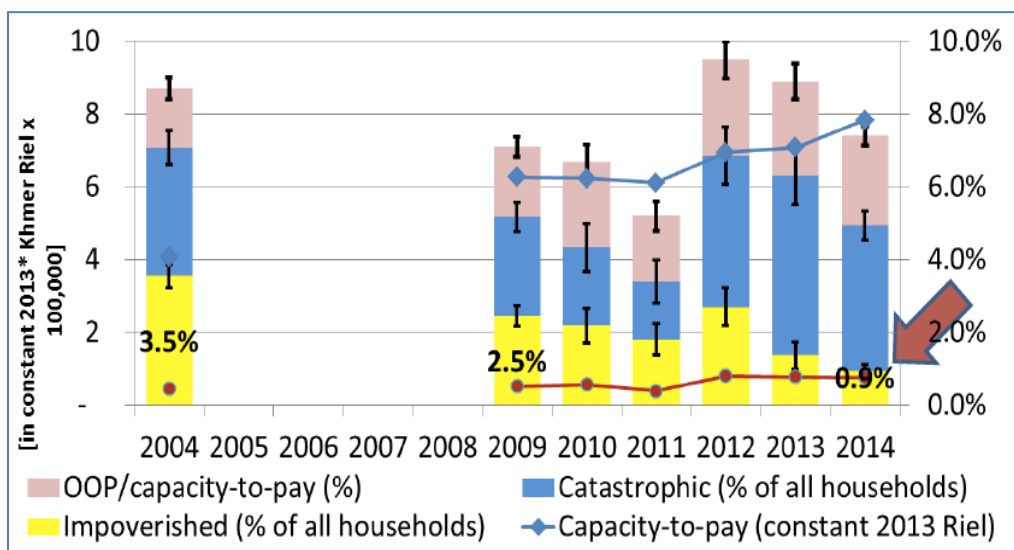


Source: Antunes et al., 2018; GIZ, 2014.

Incidence of impoverishment from health expenditure, which used to be at 3.5 percent in 2004 was reduced to 0.9 percent in 2014. Between 2004 and 2014, there was an overall two-fold increase in the average household capacity to pay (Figure 1.5). While it is plausible that the increase in both capacity to

pay and OOP expenditure was affected by the overall rise of national economic growth and prices, there was a decrease in OOP as a proportion of the capacity to pay and incidence of catastrophic expenditure, indicating that more households became protected against health-related expenditures. Overall, incidence of impoverishment from health expenditure, which used to be at 3.5 percent in 2004 was reduced to 0.9 percent in 2014, showing a 75 percent reduction over the 10-year period.

Figure 1.5 Trends In Health-Related Household Expenditures (2004, 2009, 2014)



Source: Antunes et al., 2018; GIZ, 2014.

There is more that needs to be done in order to accelerate progress and close remaining gaps in basic outcomes (including nutrition, immunization, and neonatal mortality especially as seen with an equity lens to narrow health disparities) and lay the foundation to address emerging issues such as pandemics and noncommunicable diseases (NCDs). Strengthening the supply-side capacity to deliver these services, stronger links to community services and overall focus on capacity for health protection and promotion, including outreach services through health workers, community-based health workers and volunteers, are major areas for further development. Policy to reorient the health system toward strengthening preventive and primary care and addressing social determinants of health is progressing, but requires further investments.

1.4 Current Knowledge on Health Financing Innovations in Cambodia

Two major health financing initiatives stand out in the Cambodian context, both of which have endeavored to enhance the performance of the public health system with a focus on the poor and aim to improve financial protection including addressing high OOP spending. They are the Health Equity Fund (HEF) system, which aims to improve access to health services for the poor, and Service Delivery Grant (SDG), a financing program that has rewarded health facilities with flexible resources to improve provision of quality health services at all levels of health facilities. This section aims to describe the history and impact of HEF and SDG based on the published literature and anecdotes. It is important to delineate that the SDGs described in currently available literature refer to the system operated through 'Special Operating Agencies' or SOAs, prior to the redesigned SDGs introduced in H-EQIP.

Health Equity Fund System

The HEF system has grown from a series of small NGO-run pilots in the early 2000s to a government-owned nation-wide social health protection and health financing mechanism providing health insurance to about 3 million poor people in Cambodia. The HEF purchases services from public health facilities on a pay-for-performance (output) basis that has improved access to health services for the poor, leverages quality improvements, and provides a major source of flexible revenue within the health system. As of May 2015, the HEF system had reached nation-wide coverage covering over 1,200 health facilities, including all Health Centers, Former District Hospitals, Referral Hospitals and one of the eight National Hospitals. New institutional sustainability measures, such as the recently created autonomous payment certification agency for HEFs, will provide strong governance support for critical institutional functions. HEFs have been financed through a pooled fund managed by the World Bank, and with contributions from bilateral and multilateral donors. The share and ownership of the Royal Government of Cambodia (RGC) has steadily increased and now a minimum of 50 percent of HEF costs are provided by RGC, expected to rise to over 70 percent of costs by 2021.

HEF coverage for the poor recognizes two different ways of beneficiary identification. The first is through the national poverty targeting process owned and managed by the Ministry of Planning (IDPoor) which pre-identifies households and provides them with an “Equity Card.” Commune and Village level local authorities conduct the pre-identification process every three years or so, nation-wide. All individuals identified as IDPoor qualify for HEF benefits for the full period of three years until the next round of pre-identification. The second mechanism is provided within the HEF system itself through a post-identification interview at an HEF-covered hospital that provides them with a “Priority Access Card.” Post-identification helps cover the patients who may become impoverished within two rounds of IDPoor, including sometimes by the health episode itself. An interview that follows the same criteria used by the pre-identification process is conducted on demand with patients who do not have IDPoor cards, but self-report as being poor and are unable to pay the user fees. HEF benefits are awarded after a successful post-ID interview and are subsequently also confirmed with community verification on a random sample basis. The Priority Access Card provides all members of the patient’s household with HEF eligibility which lasts until the next IDPoor exercise is undertaken in that region.

Households that have been identified as poor through either of the two modalities, receive a pre-defined and standard set of benefits which have been standardized by an inter-ministerial Prakas in May 2018. These include payment of service fees for the beneficiaries at public health facilities, and additional HEF benefits such as transportation reimbursements, food allowances, and funeral support as detailed in **Table 1.3**. HEF benefits are fully portable: eligible poor (including the post-identified poor) can seek health care at any contracted public health facility nation-wide. HEF-supported patients in order to receive transportation reimbursements at Referral Hospitals, are required to have a referral letter from a Health Center or pre-arranged appointment in order to encourage patients to access the appropriate levels of care.² Tertiary referrals to the national hospitals (earlier limited to the Khmer-Soviet Friendship Hospital and now expanded to all other national level hospitals in Phnom Penh) are required to be pre-arranged and have confirmation to ensure that the necessary services are available at the national hospital where the patient has been referred.

² Except in cases of delivery, attempted delivery, post abortion care, permanent contraception or emergency.

Table 1. 3 Categories of HEF Benefits

Item	National Hospitals & CPA 1-3 Referral Hospital		Former District Hospital		Health Center
	IPD	OPD	IPD	OPD	OPD
User Fees	✓	✓	✓	✓	✓
Transport Reimbursement	✓	✓	Delivery, Attempted Delivery, and Post Abortion Care Only	No	Delivery, Attempted Delivery, and Post Abortion Care Only
Caretaker Food Support	✓	No	Delivery and Attempted Delivery Only	No	No
Funeral Support	✓	✓	No	No	No

Public health facilities are paid by the HEF system on a case-based output payment system (**Table 1.4**) and are included in the latest inter-ministerial *Prakas*. Payments are made directly to facilities at the end of each month based on electronically documented utilization by HEF beneficiaries. Transportation reimbursements are calculated for HEF beneficiaries based on the actual traveling distance from their residence to the Referral Hospital. A patient allowance of US\$1.25 per day is paid for HEF beneficiaries who are admitted for in-patient care and serves to cover incidental costs including their caretaker’s food.

Table 1.4 HEF Schedule of Payments to Providers (May 2018) (in US\$)

Service Packages & Payment Rate	Health Center	CPA1	CPA2	CPA3	NHs
OPD	1.00	2.50	4.00	8.00	10.00
Delivery/Attempted Delivery/PAC*	20.00	20.00	20.00	20.00	20.00
Long-Acting Reversible Contraception (IUD/Implants)/ Family Planning	5.00	5.00	5.00	5.00	5.00
IPD (CPA/NH: with minor surgery)	20.00	20.00	25.00	30.00	35.00
IPD with major surgery**	N/A	N/A	80.00	250.00	300.00
Minor Surgery	N/A	40.00	50.00	100.00	100.00
Emergency	5.00	62.50	62.50	75.00	80.00

*Referral Hospital facilities at the CPA 1-3 levels will receive a case-based payment for attempted deliveries that are referred to a higher level of care if there is a documented referral that clearly states a valid reason for the referral. This payment is to ensure that there are no financial considerations influencing the decision to refer a delivery to higher care.

**All surgical cases are defined by the use of general or epidural anaesthesia during the procedure.

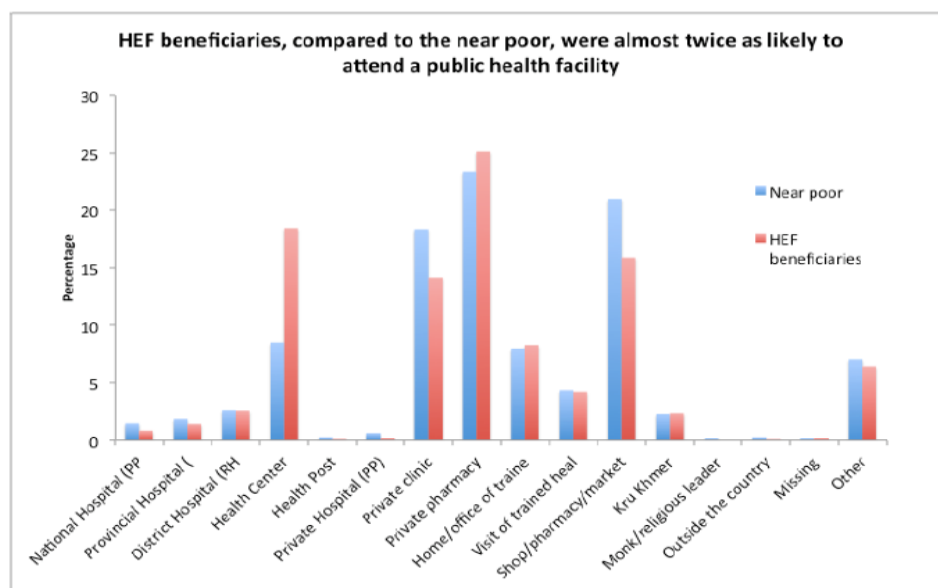
The Patient Management and Registration System (PMRS) is a customized and fully Cambodian web-based application designed to manage all HEF patient information nation-wide that was developed under the stewardship of the Department of Planning and Health Information (DPHI) of the MOH. Specific tools are built into PMRS for the management of the HEF system. Under USAID funding, University Research Co. (now called ‘URC’) has been engaged by MOH and the pooled fund partners cofinancing the Health Equity Fund system to function as the “HEF Implementer”. This includes

maintaining PMRS as well as managing a system of field-based monitors covering each of the country's Operational Districts to conduct household and key informant interviews, bedside monitoring, and document reviews to verify HEF claims.

In light of the overall increase in health services utilization, the recent body of evidence indicates a growth in public health service utilization among Health Equity Fund (HEF) beneficiaries compared to those without the entitlement (Bigdeli, 2016 #31;GIZ, 2014 #39). This held true not only between the rich and poor, but also when the non-beneficiaries had almost the same income status as HEF beneficiaries, or the so-called “near-poor”. For example, approximately 10 percent of the near-poor population chose to visit public health facilities compared to 25 percent of HEF beneficiaries in the year 2015, which was an increase from 20 percent of HEF beneficiaries who had access to free health care in the year 2011. **(Figure 1.6)** (Bank, 2016 #28). The growing utilization of public health services by HEF beneficiaries may have been due to the nation-wide coverage of HEF as well as the increased awareness of their entitlement to free health services, given that there was a 2.5-fold increase in utilization when the beneficiaries received instructions on how to use the entitlement card (Bank, 2016 #28). One analysis predicts that the access rate is expected to improve further with the increased use of the entitlement (Ensor, 2017 #30).

The increase in utilization may be observed at different levels of public health services. Firstly, there is growing evidence highlighting the increasing role of Health Centers (HC) as a primary-level care and a referral system in Cambodia. Between 2006 and 2013, approximately 60 percent of the public health services utilization had been captured at HCs, while the remaining use was at the Referral Hospital (RH) inpatient departments (IPD) and outpatient departments (OPD), which was again higher for HEF beneficiaries than non-beneficiaries **(Table 1.5)** (Annear, 2016 #33). There was a higher utilization rate of IPD (40 percent) compared to OPD (10 percent) among HEF beneficiaries based on the World Bank 2013 rural health market study (Bank, 2016 #28). In addition, there was a higher increase in access rate to these services and new born services by HEF beneficiaries at district RHs than the provincial RHs (Annear, 2016 #33). These trends may indicate growing referrals made after an HC visit by HEF beneficiaries.

Figure 1.6 Utilization by Service Type for the Near-Poor and HEF Beneficiaries, 2015



Source: World Bank, 2016.

Table 1.5 HEF Member Visits to Facilities by Frequency and Percent, 2004-2013

Department	Frequency	Percent (%)
Health Center	1,651,627	62.7
Inpatient Department	485,472	18.4
Outpatient Department	498,938	18.9
Total	2,636,037	100

Source: Annear et al., 2016.

There are concurrent schemes and programs that further augment the effect of HEF, especially by improving quality of care or further reducing access barriers. It is indeed difficult to attribute all changes to the HEF system alone, given that there are other coexisting schemes with similar aims of increasing the access and utilization of public health services among the poor, such as Integrated Social Health Protection Scheme (iSHPS), Community-Based Health Insurance (CBHI) and Vouchers. Many of these, though, work closely with HEF and leverage the impact of the program. In comparison to districts with only HEF scheme in place (13-40 percent), those that had implemented iSHPS showed higher proportion of HEF beneficiaries who sought care at a public facility (56 percent) and thus decreased direct costs (**Table 1.6**) (Jacobs, 2017 #29). This points towards the effectiveness of the supply-side quality improvement components embedded in the iSHPS planning, such as pay-for-performance and improved governance structure (Jacobs, 2017 #29). A significant impact on increased public health services utilization and decreased OOP spending was documented when HEF beneficiaries also had vouchers for certain services (Ensor, 2017 #30). The emerging evidence indicates that the concurrent impacts of different schemes have played a role in the overall improvement of health systems that may have not only affected public health facility visits among the poor, but also toward non-poor and private sectors to some extent (Ensor, 2017 #30).

Table 1.6 Care Seeking at First Provider, 2014

Sought care at	HoHEF N (%)	CHEF N (%)	iSHPS N(%)
Health Center	34 (8.3)	130 (29.0)	559 (48.7)
Public Hospital	21 (5.1)	47 (10.5)	80 (7.0)
Private Facility	209 (50.8)	161 (36.0)	337 (29.3)
Non-Medical*	147 (35.8)	110 (24.6)	172 (15.0)
Total	55 (13.4)	177 (39.5)	639 (55.7)

Source: Jacobs et al., 2018.

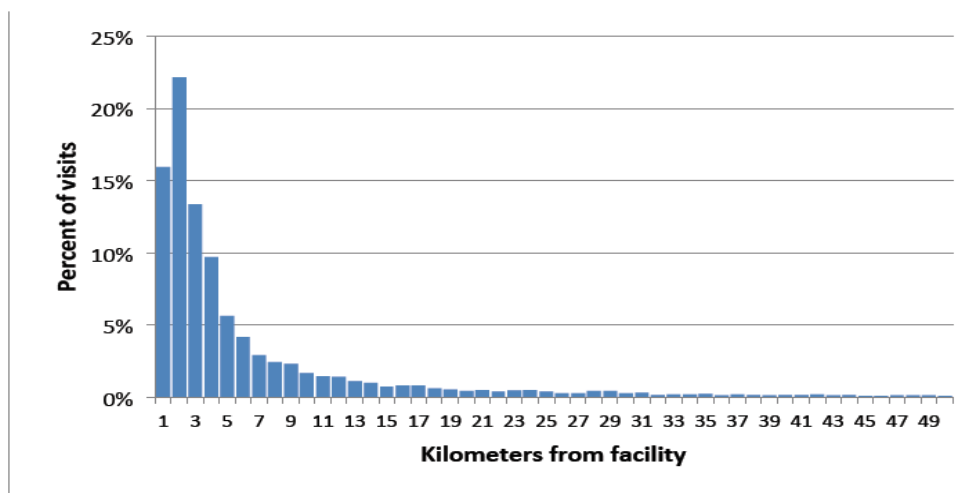
HoHEF: HEF-covered hospitals only; CHEF: HEF-covered Health Centers and Hospitals (comprehensive HEF).

*Non-qualified informal providers (drug shops, traditional healers, market vendors).

Several challenges still exist, often arising from systematic factors that contribute to under-utilization among the poor. Firstly, several studies have identified **distance** as one of the fundamental barriers, especially for OPD visits (**Figure 1.7 and 1.8**) (Annear, 2016 #33; Bank, 2016 #28). Between July 2016 and March 2017, when the post-ID process was temporarily unavailable, as well as no transport allowances given, the utilization rate among HEF beneficiaries significantly decreased, even in reproductive, maternal and newborn health services that usually comprise the majority of the HEF patient visits (PSL, 2017 #52). Secondly, **low awareness** of the entitlement among HEF beneficiaries, or the weak post-ID process, has been identified as another problem preventing the poor's access to public health facilities

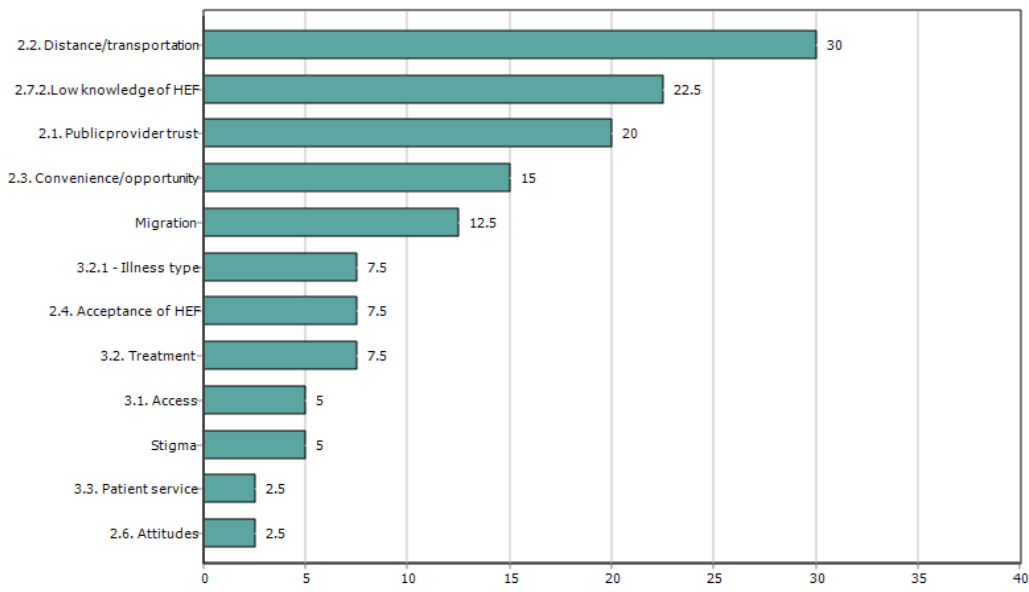
(Ros, 2015 #27). Almost half of HEF beneficiaries indicated lack of knowledge of their benefits in a survey conducted in 2015, although HEF coverage had become nearly nation-wide (Bank, 2016 #28). Another study postulated that there may be a delay of 1-2 years for the beneficiaries to become familiarized with the entitlement (Annear, 2016 #33). Moreover, some populations with similar poverty level as HEF beneficiaries may have not been identified during the pre-ID process, thereby not being able to access public health facilities (Bank, 2016 #28).

Figure 1.7 Distance Travelled to Facility by HEF Beneficiaries (% of visits)



Source: Annear et al., 2016

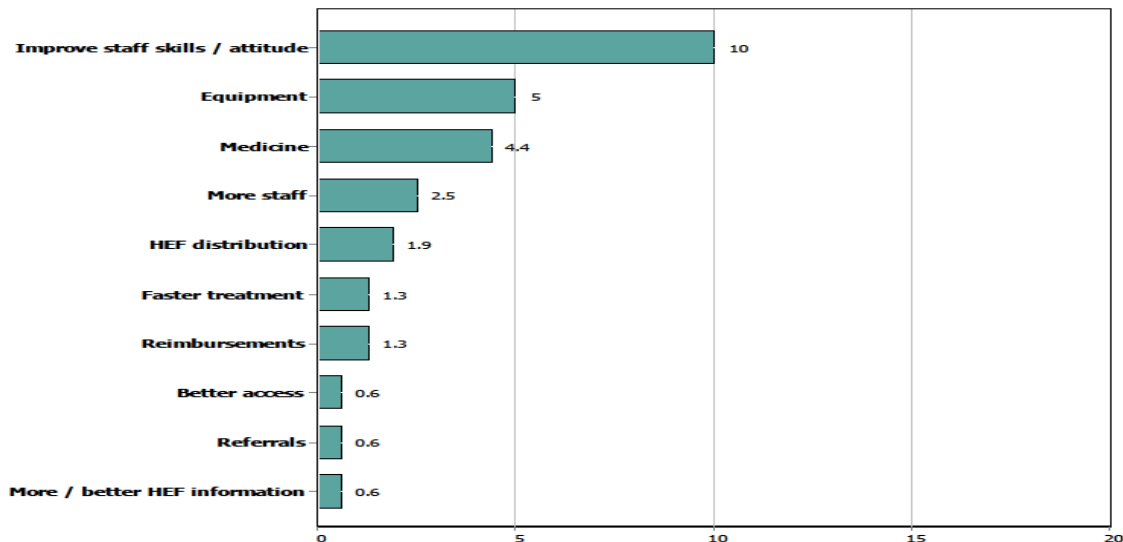
Figure 1.8 HEF Beneficiary-Reported Reasons for Lack of Utilization of Public Health Facilities, 2015



There are notably several supply-side barriers identified through surveys and interviews with HEF beneficiaries and public facility staff that still need to be addressed. The perceived quality of care at public facilities continues to be lower than private facilities, as patients often rated lower staff skills and

attitudes for the former (**Figure 1.9**) (Bank, 2016 #28;Ros, 2015 #27). The issues around competency of providers and provision of medicines seem to be especially prominent for patients with noncommunicable diseases (NCD) (Bigdeli, 2016 #31;Jacobs, 2016 #37).

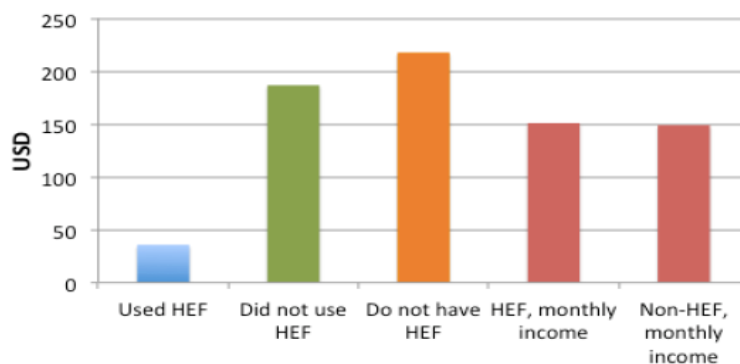
Figure 1.9 HEF Beneficiaries' Recommendations for Public Providers, 2015



Source: World Bank, 2016.

Several studies suggest that the HEF system has made access to health care more affordable. Interviews conducted in 2013 found that deliveries at public facilities reduced spending for HEF beneficiaries especially if they were more severe cases (Ros, 2015 #27). In 2013-2014, approximately 70 percent of HEF beneficiaries indicated on a survey that they had chosen to seek care at a private facility, incurring higher OOP expenditures than others who sought care at a public facility (Jacobs, 2017 #29). Reinforcing this finding, the HEF utilization survey 2015 revealed that HEF beneficiaries had a four-fold increase in spending when they did not use public health services and the near-poor had a six-fold higher spending when not identified as eligible for HEF benefits (**Figure 1.10**) (Bank, 2016 #28). Therefore, the findings consistently report a reduction in OOP spending among HEF beneficiaries who visit public health facilities.

Figure 1.10 Medical Expenses and Monthly Income by HEF Beneficiaries and Near-Poor



Source: World Bank, 2016.

Despite the overall reduction in OOP spending, concerns regarding unresolved effects of indirect costs still persist. Interviews in 2013 found that some HEF beneficiaries used loans or spent additional amounts to buy preferred food, medicine, and transportation, and those who could not address these additional indirect spending chose not to use the HEF entitlement altogether (Ros, 2015 #27). There are mixed responses towards informal payment for providers at a public facility, as some reported reduction while others reported in-cash or in-kind payments still being given to public facility providers (Ros, 2015 #27). In addition, having an NCD had a significant impact on the likelihood of catastrophic expenses, based on a multivariate logistic regression analysis (**Table 1.7**) (Jacobs, 2016 #36).

Table 1.7 Odds Ratios of Associations between Household with a Chronic Patient and Catastrophic Health Expenditure

Household member with a chronic disease	40% threshold	10% threshold
None	1.00	1.00
At least one	5.04*	13.85*

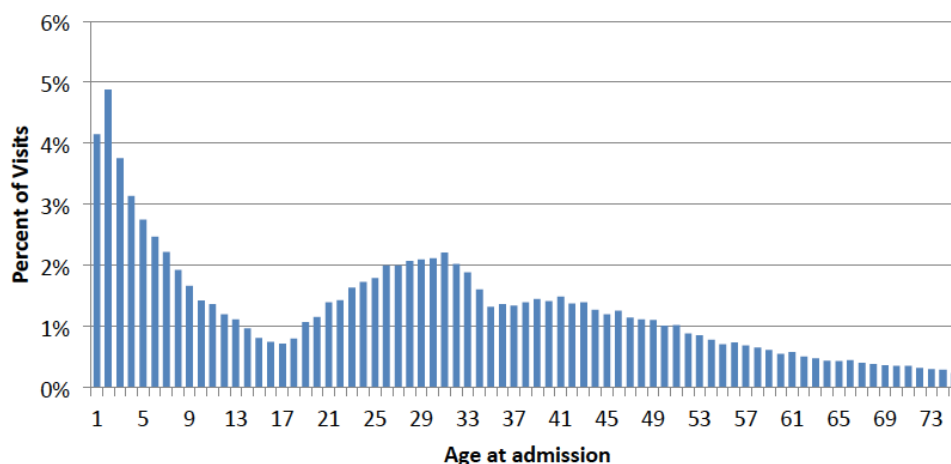
Source: Jacobs et al., 2016a.

*Significant at 1 percent ($p < 0.01$).

As access and affordability improved, it was also evident that more poor populations, based on the IDPoor identification, had utilized public health facilities to an increasing extent over the years, thereby reducing OOP spending among the poorest Cambodians. Since the HEF scheme focuses on the poor, such effects correlate to the level of poverty of the household (Ensor, 2017 #30; Ros, 2015 #27).

Within the HEF beneficiary populations, there exist factors that differentiate the level of care and OOP saving to which patients are entitled. So far, the analyses show that HEF has primarily been used by patients requiring maternal and child health services (**Figure 1.11**) (Annear, 2016 #33). While this itself is good progress and corroborates Cambodia's trailblazing performance on MDG 4 and 5, the use of other services has been poor and addressing this may be necessary to address growing health needs of Cambodia, such as for NCDs. In fact, patients with NCD have not been able to benefit from their HEF entitlement, due to the inability of HEF to cover transportation for the frequent outpatient visits that are often required for these patients. The lack of training among providers to properly manage NCD treatment compounds this problem (Jacobs, 2016 #36). Moreover, there are no special services included in the HEF package, which target patients with NCD (Bigdeli, 2016 #31). This is worrisome, given the steadily high and increasing care seeking behavior among the older generation from 2004 to 2014 (87 percent to 97 percent), as well as the two-fold increase in their risk of indebtedness in rural areas compared to urban areas (**Table 1.8**) (Jacobs, 2016 #36). When these special needs and arrangements are not met under their HEF entitlement, patients reported the use of private facilities (Ros, 2015 #27). Therefore, further refinement of the HEF benefit package and eligibility criteria is worth considering, hand-in-hand with improved service readiness of public health facilities, amidst the rapidly changing burden of disease in Cambodia.

Figure 1.11 Distribution of HEF patients by Age at Admission, 2000-2012



Source: Annear et al., 2016.

Table 1.8 Care Seeking Behavior by Age, and Indebtedness by Age and Region (Rural, Urban) (%), 2004-2014

	2004	2009	2014
Care seeking (%)			
Individual ≥ 60 years	86.7	92.2	97.3
Individual < 60 years	90.8	91.3	98.2
Indebted for paying health care costs (%)			
Households without older people	5.0	4.0	2.5
Households with older people	4.8	3.3	2.2
Rural	5.3	3.6	2.5
Urban	2.0	2.0	1.0

Source: Jacobs et al., 2016a.

Based on the above findings, there are several persisting challenges that have been identified by the existing body of evidence around the HEF system which suggest **where future efforts at improving the program may be directed.**

- The competency and attitudes of providers at public facilities have not yet matched the expectation of HEF beneficiaries, which has led to underutilization of public health facilities.
- Beneficiary identification process and beneficiaries' awareness of their entitlement have a significant impact on access to public health services, and remain areas for further improvement.
- Despite the overall reduction in OOP spending, some concerns were raised regarding the unresolved effects of indirect costs, which deterred HEF beneficiaries from seeking care at public health facilities.
- Patients with NCD have higher risk of experiencing catastrophic expenses; however these patients have not been able to benefit from their HEF entitlement due to the inability of HEF to

cover indirect costs for their visits and the lack of competency of providers to properly manage NCD treatments.

Service Delivery Grants

In 2008, the Cambodian Ministry of Health (MoH, #50) established special operating agencies (SOAs), either based in a provincial referral hospital (PRH) or in an operational district (OD) with the aim to increase utilization and quality of care in identified locations. This was part of an initiative to pay performance-related grants, or Service Delivery Grants (SDG) under an internal contract between MOH/PHD and the SOA. As per the legal provisions in Cambodia, SOAs are designated organizational units of a Ministry with service delivery functions, which are granted some additional delegation of managerial authority and flexibility, jointly by the parent Ministry and MEF, under sub-decree and other policy issuances, in return for stronger accountability for performance. The arrangement required that SOA staff collectively and individually sign contracts, which set annual performance targets, and achievement of these targets triggered payments of SDGs.

The SOA arrangement had several goals. Firstly, the main priority was to help facilities improve service quality, by means of providing additional funds to fill monetary gaps and issue bonus payments to individual staff when targets were achieved or surpassed (up to 20 percent of funds). This would increase output in public facilities, allow more staff to be employed as per need, and reduce stock-outs of important drugs and supplies. Secondly, it was anticipated that the subnational entities improve their management and accountability structure, by allowing more autonomy to the SOA designated organizations. Lastly, the monitoring procedure was intended to improve the responsiveness and performance at health facilities.

Based upon the implementation experience until 2015, the SOA and SDG system underwent a major revision with the commencement of the Health Equity and Quality Improvement Project (H-EQIP) as described earlier in this chapter. H-EQIP aims to use performance-based payments under SDGs with much stronger links to performance and in particular focuses on quality of services. This is combined with fixed grants to health facilities, in addition to further streamlining the funds flow and reporting arrangements. The new fixed lump sum grants form part of the SDG system through a joint *Prakas* issued by the Ministry of Economy and Finance (MEF) and MOH, and are intended to complement the facilities' operational budget. The fixed grants initially added up to an additional US\$6.8 million for 2016, and then increased to US\$9 million per year from 2017.

In the redesigned system, the payment of SDGs to HCs and hospitals is more closely linked to performance in the delivery of basic and comprehensive packages of services, such as critical reproductive, maternal, neonatal, child, and adolescent health services. The MOH SDG manual outlines the intended use for the fixed lump sum grant and performance-based grants (MoH, 2016 #50):

- Fixed Lump sum Grants are intended as a complement to the facility operational budget, to manage and implement direct spending for the purpose of promoting quality and equity in patient care.
- Performance-based Grants are intended to reward health facilities for quality performance and to reward OD and PHD offices, and in particular certified assessors for conducting quality ex-ante assessment. Up to 80 percent of Performance-based Grants can be spent for staff incentives. At least 20 percent of Performance-based Grants are eligible for any other SDG-eligible expenditures.

Despite this progress in the SDG system, rigorous evaluation of SOA/SDG has been difficult. Notably, there was no baseline and no control or counterfactual that could be assessed in comparison to SOA performance. SOA ODs have a distinctive history of higher levels of funding on average and higher total staff remuneration on average, which makes it difficult to attribute changes in performance to the contracting design features. Moreover, there have been implementation problems with the performance component of the SDG and design problems with the grant allocation formula, leading to a series of revisions in design and implementation of design each year. Thus, it would be difficult to attribute evaluation findings to design features, as distinct from implementation issues. However, now that the new objective performance assessment system, National Quality Enhancement Monitoring Program (MQEMP) linked to the payment of performance-based SDGs has commenced in May 2017, new administrative data is expected to become available for future analytical work on this new modality. So far, considerable observation-based and anecdotal information has started becoming available on the use of these fixed lump sum grants, which have been disbursed since July 2016.

To illustrate one such example, in March 2017, the H-EQIP cofinancing partners undertook the second Implementation Support Mission (ISM) in four provinces (Kampong Cham, Kampong Chhnang, Kampong Speu and Kampot), with the objective to review the overall progress and operational management of the project at the point of service delivery, including the implementation of the fixed lump sum SDGs (WorldBank, 2017 #49). It was observed that most health facilities had used the fixed lump sum grant according to the MOH guidelines and eligible expenditure list. In addition to those that were captured during the ISM visit, a few additional uses of fixed lump sum grant were noted at subsequent site visits, which included: hygiene and infection control supplies (for example, alcohol, hand-washing supplies, dustbins), medical equipment (for example, thermometers, fetal heart sound monitors or Dopplers), stethoscopes, tension meters, toilet bowls (in existing toilet stalls only), fans, and repair of incinerators.

Some anecdotal experiences were shared by facility directors and patients at the health facilities, in relation to the impact of fixed lump sum grant on service quality improvement, and have been included as boxes in this section in view of their highly innovative and inspiring use of SDG funds (**Box 1-1 and Box 1-2**).

Box 1-1 Provision of Neonatal Kit at Tray Koh Health Center, Kampong Bay OD, Kampot Province

The director and staff at the Tray Koh health center shared a story about the newborn kit that every new mother received upon her delivery in the health center, which included baby mittens, blankets, clothes, instructions on nutrition and breastfeeding. Following this initiative, the health center has seen increased utilization patterns for antenatal care and postnatal care by patients who were perceived to have appreciated the attention of health care staff. The practice of giving out and explaining the contents of the kits to the mother strengthened personal relationships between the midwives and patients as it allowed an **additional counselling opportunity** for midwives, which included instructions on breastfeeding and its implications on nutrition. Moreover, midwives had an opportunity to take ownership for this innovative idea that could be supported by their health center.



Newborn kits for boys and girls – an innovation by Tray Koh HC (World Bank, 2017)

Box 1-2 Use of Fetal Heart Sound Monitoring Device (Doppler) at Skun Health Center, Cheung Prey OD, Kampong Cham Province

This health center in Skun (and many others like this one) has invested its fixed lump sum SDG resources in what the team has been wanting to do for a long time - to buy a fetal heart sound monitoring device, which costs US\$150 to US\$160. Pregnant mothers really like being able to hear the heart sounds of their unborn child, which comes out loud and clear using this device; this makes them look forward to their Antenatal Care (ANC) visits. The device has impacted positively on the interpersonal relationship between HC staff and patients, and also provided greater counselling opportunities. More importantly from a clinical perspective, the device allows the facility to monitor fetal well-being and detect any fetal distress when a woman is in labor at the health center. Timely detection of fetal distress can help save lives - both of the mother and of the child - through timely remedial action at the health center and also through timely referral.



Fetal heart sound monitor and blood pressure monitor at the Skun HC (World Bank, 2017)

Findings from the field visits furthermore indicate that **there is a need for more information on SDGs for the facility staff's understanding of the use of funds in the early years of this modality**, particularly related to the eligible expenditures (for example, renovations and civil works) and procurement procedures, including limits of spending using petty cash and other sources of funds. The mission also noted that while facilities had a good understanding of bookkeeping due to the nation-wide Finance Management (FM) training and effective coaching by PHDs and ODs, the understanding of accounting and financial management instructions given to the facilities varied. **Providing such clarity will further build facilities' confidence in planning and budgeting of these novel funds.**

As indicated earlier, the published literature primarily pertains to the previous configuration of the SOA and SDG system, prior to its revision in H-EQIP. It indicates that the **incentives targeting health workers (HW) have had positive impacts on recruiting or retaining more HWs in the public sector who may have otherwise gone to work for NGOs or the private sector** (Witter, 2016 #38; Ensor, 2016 #45). Another set of interviews with SOA officials indicated that the amount of incentives given to primary care providers either diverted them to the private sector or kept them in public facilities, indicating whether the incentive offset the monetary benefit of working in the private sector was a determining factor for them to stay in public facilities (Khim, 2013 #47). Some expressed the benefits of the SOA managers' monthly monitoring, as it affected staff incentives and worked to reduce misrepresentation of service outputs (Khim, 2013 #47).

On the other hand, it was also repeatedly reported that the **monitoring routines by the central and provincial teams were not kept regular, mainly due to low incentives** (Vong, 2015 #51; Khim, 2013 #47). Moreover, the very nature of internal contracting in which the purchaser, provider, and monitoring roles are often unclear came with its own challenges in terms of accurate reporting of data (Khim, 2017 #35). Some indicated a problem in the centralized process of choosing and setting targets, which may not be realistic at the level of each facility (Khim, 2013 #47; Vong, 2015 #51). Moreover, inadequate competency, unequal distribution of HWs among rural and urban areas, insufficient remuneration have been documented (Khim, 2017 #35); (Witter, 2016 #38). Many of these emerging challenges were duly addressed in the revised SDG system implemented under H-EQIP. For example, the importance of performance linkages was fully restored, and supervision quality is also now undertaken in a structured manner as well as measured and incentivized in the revised system.

SOAs in Cambodia stand out in their positive effects on local autonomy and ownership. The SOA arrangement in Cambodia was in a different league from most other contracting-in and contracting-out models operational in the previous decade that had engaged international organizations, which incurred higher costs and thereby were of questionable sustainability (Witter et al., 2016). In addition to the increased MOH discretion by means of internal contracting, the SOA implementation also required substantial engagement of the provincial and district entities in order to be selected, implemented, and monitored effectively (Vong, 2015 #51). In fact, a set of interviews with administrative officials at central, provincial and district level reveals that the SOA operations have given them an increased sense of ownership (Khim, 2013 #47). Another study expressed that the SOA arrangement was a key instrument in giving the MOH control to manage the Human Resources for Health (Witter, 2016 #38). Health managers also conveyed their increased ownership, allowing for creative measures taken at their discretion (Vong et al., 2015).

The development of clearly defined performance indicators between different levels of government bodies created accountability structures that improved performance (Khim, 2017 #35; Vong, 2015 #51).

In one analysis, Kampong Cham was shown to have the highest productivity in service delivery given that approximately half of its ODs were early adopters of SOAs compared to other provinces included in the study that did not have SOAs (Ensor, 2016 #45). It was generally accepted across interviews with the SOA officials that the SOA arrangement facilitated better management at health facilities (Khim, 2013 #47).

However, management and supervision capacity did need further improvements. The SOA system had been established with detailed manuals and institutional arrangements, and there was wide ownership and acceptance of the model. It translated into improved management, better provider behavior, and strengthened health service delivery. However, several challenges remained, particularly in relation to the SDG scheme's complexity in monitoring and disbursement process. Despite the greater administrative autonomy and increased local capacity compared to previous contracting models, evidence elucidates weak management capacity in certain areas. Firstly, there was general confusion around clear roles of contracting bodies (Khim, 2017 #35). Secondly, although the SOAs received approximately 95 percent of their funding from the government budget and SDGs, some SOA directors raised concerns as to how to accurately allocate the SDG funding and expressed that they were given insufficient instructions to fulfill their duties (Khim, 2013 #47). Delays and inadequate amount associated with the SDG disbursement were commonly mentioned in interviews, which had a negative impact on executing their work plan (Khim, 2017 #35; Khim, 2013 #47). One source noted the complexity often required with performance-based financing mechanisms at the local level, indicating the need for continued support for capacity building during the HSSP2 phase (Witter, 2016 #38).

The redesigned SDGs attempt to address the known concerns with the SDG system, and have improved linkages with performance, a robust assessment system, and independent cross-verification of assessed performance. The impact evaluation of these redesigned SDGs is expected to yield valuable information on the redesigned system, and will inform decisions on the continuation of these grants, as well as areas where the design and implementation of SDGs can be further improved.

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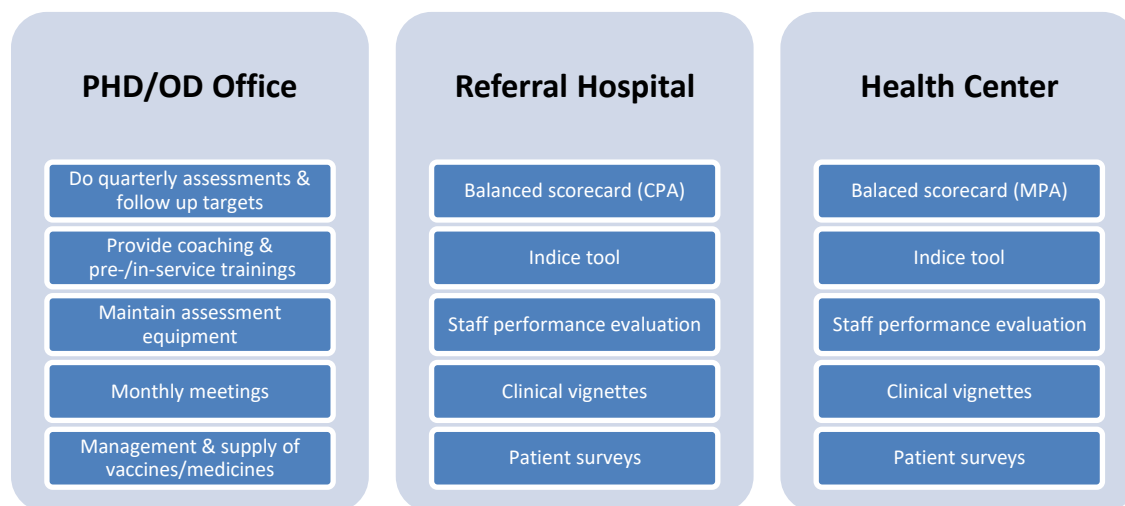
2. Impact Evaluation and Methodology

2.1 Intervention: Service Delivery Grants

The purpose of the SDG Impact Evaluation is to measure the impact – outputs and short-term outcomes – of the implementation of performance-based SDGs. As outlined in Chapter 1, the SDG program is a component of H-EQIP, whose primary objective is to improve quality of health care services and financial protection for vulnerable groups. This section describes in more detail each component of performance-based SDGs that comprises the program’s overall objective. The performance-based SDGs are an additional layer of payments provided, based on assessed and verified performance, over and above the fixed lump sum SDGs.

Quality health service delivery in the H-EQIP operational definition refers to infrastructure, managerial capacity, and clinical competency, achieved through the implementation of new performance-linked SDGs, which is in effect at three levels: PHD and OD Offices, Referral Hospitals and Health Centers (**Figure 2.1**). The performance of these entities is measured by National Quality Enhancement Monitoring Tools (NQEMT), which are applied quarterly by certified assessors from the OD and PHD offices. These payments supplement the revised fixed lump sum SDGs that complement health facilities’ existing operating budget.

Figure 2.1. Components of SDG Program for Each of Three Types of Health Entities Directly Affected by the SDG Program



The ex-post verification is initially carried out by an independent verification agency financed by KfW, and in early 2019, this function will be systematically handed over to the Payment Certification Agency (PCA). Once assessed and verified, the MOH releases the performance-based SDG payments directly to the health facilities, which provide a flexible source of funding that can be used as per the provisions of the SDG manual.

Provincial Health Department and Operational District Level

SDGs at this level aim to strengthen the management of Operational Districts (ODs) and Provincial Health Departments (PHDs). Performance of ODs and PHDs is measured every quarter against their self-reported activities on a scorecard measuring key supervisory processes and health system outputs.

These include: (a) timely completion of quality checklists for health facilities in their jurisdiction, (b) contribution to capacity building activities for in-service and pre-service training, (c) drug stock-outs in health facilities, human resources availability, (d) submission of Health Management Information System (HMIS) reports, and (e) quarterly review meetings and system functionality. Funds received by these supervisory levels are predominantly intended to meet their supervisory travel costs (travel for assessment and coaching is also supported through this mechanism) as well as for performance-based incentives.

Hospital Level: CPA-1, CPA-2 and CPA-3

This subcomponent aims to incentivize improvements in quality of care at the secondary level, improve performance in capacity building activities for in-service and pre-service candidates, and promote utilization of services by HEF beneficiaries. Quantitative tools are used to assess their performance on structure, process, and outcomes. Structural measures comprise the context in which care is delivered, including infrastructure, staff, financing and equipment. Process measures include the technical and interpersonal process and actions that make up health care as reflected in the transactions between patients and providers and staff throughout the delivery of health care. Outcomes refer to the effects of health care on the status of patients and populations and will be considered to be a result of inputs and processes of care. Up to 80 percent of the Performance-Based Service Delivery Grant (PBG) can be spent for staff incentives; at least 20 percent of the PBG is eligible for any other eligible expenditures from those laid out in the H-EQIP SDG manual, such as small civil works, equipment, drugs and operational costs. The NQEMT for the hospital level includes an assessment of: the hospital balanced scorecard (which comes in three different types, as per the type of hospital: CPA-1, CPA-2, CPA-3), indice tool, individual performance evaluation for hospital staff, selected and adjusted L2 clinical vignettes, neonatalie observational checklist, and content of care traces extracted from community client satisfaction surveys.

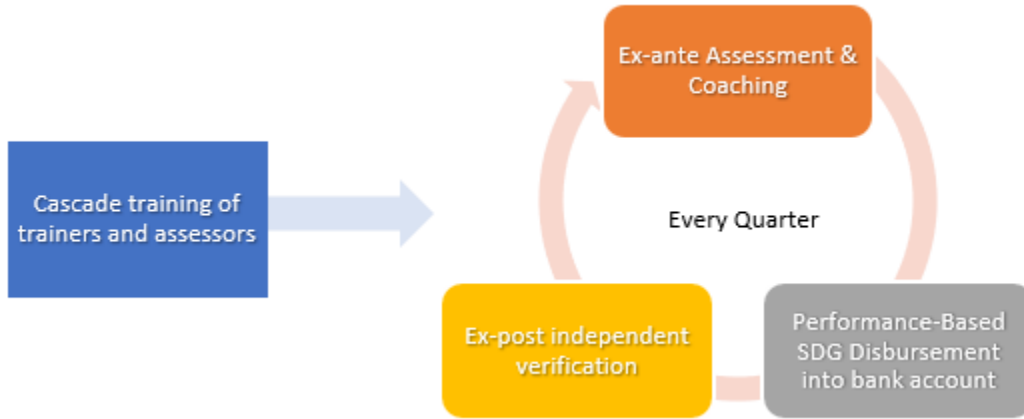
Health Center Level: MPA

SDGs to health centers help support the delivery of Minimum Package of Activities for health centers. The quality of service delivery is systematically measured quarterly, using standardized assessment tools. The NQEMT for health center level include: the health center balanced scorecard, indice tool, individual performance evaluation for health center staff, selected and adjusted L2 clinical vignettes, neonatalie observational checklist, and content of care traces extracted from community client satisfaction surveys. Eligible categories of expenditure for PBG at health center level are the same as hospital level and specified in the H-EQIP SDG manual. Since 2018, additional performance-based resources are available for the special needs of remote areas and for health centers with a higher proportion of indigenous population.

2.2 Theory of Change

The quality of health service delivery is expected to be positively reinforced by the quarterly quality assessment using NQEMT, leading to the regular disbursement and use of performance-based SDG (**Figure 2.2**). The baseline survey was conducted at the level of OD office, health center and household to measure the existing quality of health service delivery prior to the implementation of the intervention. (In comparison to the level of intervention as outlined in the previous section, PHD office and Referral Hospitals were not chosen entities to measure impact.) The SDG results chain is outlined in **Annex A**.

Figure 2.2 Theory of Change and Short-Term Outcomes at the Level of OD Office, Health Center and Household



Expected Outcomes	
Supply	Demand
I. Improved monitoring and evaluation J. Improved managerial capacity and financial autonomy K. Improved perceptions of quality of care by health worker L. Increased motivation and morale of health worker M. Improved health worker clinical competency N. Increased availability of health worker at health facilities O. Improved use and functionality of available infrastructure P. Increased availability of necessary supplies and consumables	D. Improved perceptions of quality of care by citizens E. Improved financial protection F. Increased utilization of public health facilities
OD office Health Center Health Worker Exit	Exit Household
SDG Impact Evaluation Survey Instruments	

Operational Districts

The intervention will provide ODs with regular, verified and detailed data on the quality of care at health centers. This will raise awareness of performance issues, which interact with incentives for the OD to perform essential management and supervision tasks. This is expected to:

- Increase OD awareness of performance issues and local constraints, including staffing and performance
- Focus OD efforts on improving quality at lower-performing facilities
- Lead ODs to increased, better informed and more regular/routine supervision of clinics

The intervention directly encourages ODs to improve their management of clinics. It also creates indirect incentives, as health centers may more actively demand OD support so that they can improve their quality and hence obtain a larger bonus payment. As a result, the intervention may:

- Improve and change OD management in line with the incentives under NQEMP
- Improve targeting of supervision and resources to facilities that are most in need
- Raise the overall performance of the OD, for example, with regard to training, stock-outs, HMIS reporting and indicators measured by the NQEM assessment tool

- Increase the motivation and satisfaction of OD and center staff

Health Centers

The intervention provides health centers with a range of incentives, as well as the requisite financing and autonomy that are expected to improve performance and motivation. For instance, the intervention is expected to:

- Increase the productivity of center staff, as measured by improved performance on measured indicators, lower absenteeism and improved clinical quality
- Improve the allocation of resources to deficient areas of care, and facility management, so as to improve quality scores
- Increase health centers' awareness of performance problems, because of increased supervision by the OD and regular data collection/reporting that is tied to bonus payments
- Focus health centers' attention on clients and improve attitudes toward clients.
- Raise the motivation of staff, thus improving retention and lowering the rate of workers engaging in "dual practice".

Households

Although the intervention does not directly target households, it is expected to indirectly impact households in the respective districts and catchment areas through the improved performance of the health facilities. Increases in quality and quantity of health care delivery are expected to increase the demand for such services. The objective of the study at the household level is therefore to measure health-seeking behavior at baseline, both amongst the general population, and in the HEF beneficiaries (as well as Community-Based Health Insurance (CBHI) and voucher beneficiaries). It is of particular interest to document changes in demand toward the public health sector, and especially, if there is a decrease in the utilization of informal health structures. In addition, self-reported perceptions of quality by clients are also being measured.

Finally, the intervention at the OD and health center levels is expected to impact households in various ways, for example:

- Increase the quality of care received, which in turn could affect perceptions of quality
- Increase demand for health care services at the health center level, thus increasing care seeking and reducing the utilization rate for informal providers, private providers and higher-level public facilities.
- Improve equity as HEF households may disproportionately benefit because of the added demand-side incentives to use health centers.

Measurable Impact

As summarized in this section, the following impact may be more likely to be detected in the impact evaluation period areas such as:

- Management of ODs and health centers (for example, M&E, financial autonomy, managerial capacity)
- Satisfaction of health worker and OD management staff
- Short-term perception of quality of care by health workers and patients
- Health worker clinical competency and availability
- Infrastructure, supplies and consumables
- Utilization (overall and public vs. private)
- Out-of-pocket payments

However, the following areas of impact are less likely to be detected within the impact evaluation timeframe:

- Health outcomes
- Long-term demand and access at public health facilities
- Sustainable equity gap reduction in financial protection and quality of care received
- Nation-wide quality of care at public health facilities

The SDG results chain is outlined in **Annex A**.

2.3 Impact Evaluation Design

Research Questions

Based on the theory of change, the overall goal of the evaluation is to assess the impact of PBGs through the implementation of the National Quality Enhancement Monitoring Program (NQEMP), in parallel with synergistic effects from fixed lump sum SDG (Box 2-1). The evaluation has three primary research questions as outlined below. For each question, other valid sources of information are listed that will complement the findings from the impact evaluation quantitative surveys to reveal more plausible explanations.

4. Does the National Quality Enhancement Monitoring Program (NQEMP) at the levels of the operational district and health centers have an average impact?

The impact of the intervention is likely to evolve over time, as the procedures are firmly put in place and all stakeholders learn and understand how the intervention works.

5. Are the impacts of the intervention heterogeneous with regard to differences in the local context?

This includes variations across ODs (for example, SOA vs non-SOA; ODs with low vs high-quality health centers; ODs with low or high-variability in center quality); health centers (low vs high quality); health care workers; and populations (for example, HEF vs non-HEF).

6. Does the intervention affect equity?

In particular, does the intervention narrow the gap in the various outcomes across health centers (for example, by raising the performance of the initially lower-quality centers) and populations (especially HEF and non-HEF)?

Measurement methods: Impact evaluation quantitative surveys and qualitative interviews, NQEMP quality scores, Implementation Support Mission aide-memoirs, SDG Process documentation, Cambodia Socio Economic Survey (CSES), Cambodia Demographic Health Surveys (CDHS), Cambodia Health Management Information System (HMIS), and Patient Management and Registration System (PMRS).

Box 2-1 What is Impact Evaluation?

Impact Evaluation is an analytical process that aims to identify the attributes and their degrees of effect for the changes in the intended outcomes due to the implementation of a program or policy. Simply put, it is an assessment of a causal relationship between the content, or inputs, of a program or policy and its *outcomes* of interest. The term *outcomes* is to be distinguished from the immediate *outputs* of a program or policy, which has been more commonly measured in the conventional assessments for a program or policy. Impact Evaluation is a complementary approach to Monitoring and Evaluation (M&E) whose primary objective is to monitor and measure target indicators over time, but not necessarily to reveal the reasons for success or failure of a program or policy – which is the central objective of Impact Evaluation. In order to identify the causes of certain outcomes, it is therefore essential to have an appropriate comparison group, or counterfactual, which did not receive the same implementation of a program or policy.

There are various methods that could be employed in an impact evaluation, according to the operational characteristics of a program or policy – namely, the available resources, eligibility criteria for selecting beneficiaries, and timing for program implementation. A prospective impact evaluation could define the intended results through a theory of change as the program or policy is being designed, identify the comparison group prior to the implementation and collect baseline data. The lack or insufficiency of such information in a retrospective impact evaluation would often lead to weak or biased results and may fail to reveal the causal relationship between a program or policy and the outcomes of interest. Even with a well-designed impact evaluation, it is important to complement the findings with other sources of information around the same program or policy, in order to ensure technical quality and policy relevance (Gertler et al., 2016).

The main purpose of Impact Evaluation is contingent on the importance of evidence-informed policy making. The demand for results is increasing to ensure the accountability and transparency of publicly-funded programs and policy. A carefully designed Impact Evaluation not only assesses the impact but also helps reaching the intended outcomes. Therefore, Impact Evaluation can be a useful tool in guiding the decision-making process for the program or policy in question. These can be categorized in two ways:

The results can reveal the effectiveness of a given program or policy, and the causal relationship between specific inputs and outcomes. Having an appropriate counterfactual would ensure internal validity. The results can also reveal the effectiveness of a given program or policy in comparison to an alternative. This allows variations and innovations in a program or policy to determine the most effective or cost-effective version.

In addition, the results from an impact evaluation can provide additional knowledge to a global platform if given sufficient external validity, in such a way that other countries could adopt a similar program or policy in their own context. Impact Evaluation, therefore, is becoming a global public good. A recent publication reveals the emerging trend that two-thirds of total development impact evaluations were published between 2010 and 2015. Health and nutrition, education, and social protection have been the most commonly evaluated sectors since 2000, although other sectors, such as energy, transportation and ICT, which were severely underrepresented prior to mid-2000 were extensively evaluated during the 2010-2015 timeframe (Sabet, 2018 #54).

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Service Delivery Grant Treatment Assignment in Practice

The treatment assignment for rolling out the NQEMP is at the OD level and the intervention is rolled out in three phases. In the first phase, the intervention was purposefully rolled out to SOA districts, as those districts were expected to be most “ready” to implement the intervention. This initial assignment was not randomized.

The assignment of the remaining non-SOA districts was randomized. Half of these districts were assigned to the rollout in phase 2 (these are called “treatment” districts) while the other half were assigned to receive the intervention in phase 3 (these are called “control” districts) (Tables 2.1 and 2.2). This was done in several steps:

1. Within a province, four strata of ODs were created:
 - District *average* of the facility score in the Level 2 quality assessment (L2) is above or below the median of the district L2 in the province.
 - District *standard deviation* of the facility L2 is above or below the median of the district L2 in the province.
2. Within each *province* and *strata*, ODs were randomly assigned to treatment and control status. For example, if there were two ODs in a province that are “high mean and low SD”, one district was randomly assigned to treatment and the other to control. If there were three ODs in this stratum, the third was randomly assigned to either treatment or control. This could only be done where there are a lot of ODs, that is, in Phnom Penh and Kandal provinces.
3. For the remaining ODs, the randomization was done within strata but without accounting for province.

Table 2.1 Number of Facilities by Phase, Stratum and Whether in Baseline

	Low SD		High SD		All
	Low mean	High mean	Low mean	High mean	
<i>In baseline</i>					
Phase 1 (SOA)	8	12	4	18	42
Phase 2 (treatment)	12	12	18	12	54
Phase 3 (control)	10	10	16	8	44
Subtotal	30	34	38	38	140
<i>Not in baseline</i>					
Phase 1 (SOA)	54	72	32	108	266
Phase 2 (treatment)	31	45	64	58	198
Phase 3 (control)	69	43	84	48	244
Subtotal	154	160	180	214	708

Table 2.2 Number of Facilities in the Baseline Survey by Phase and Province

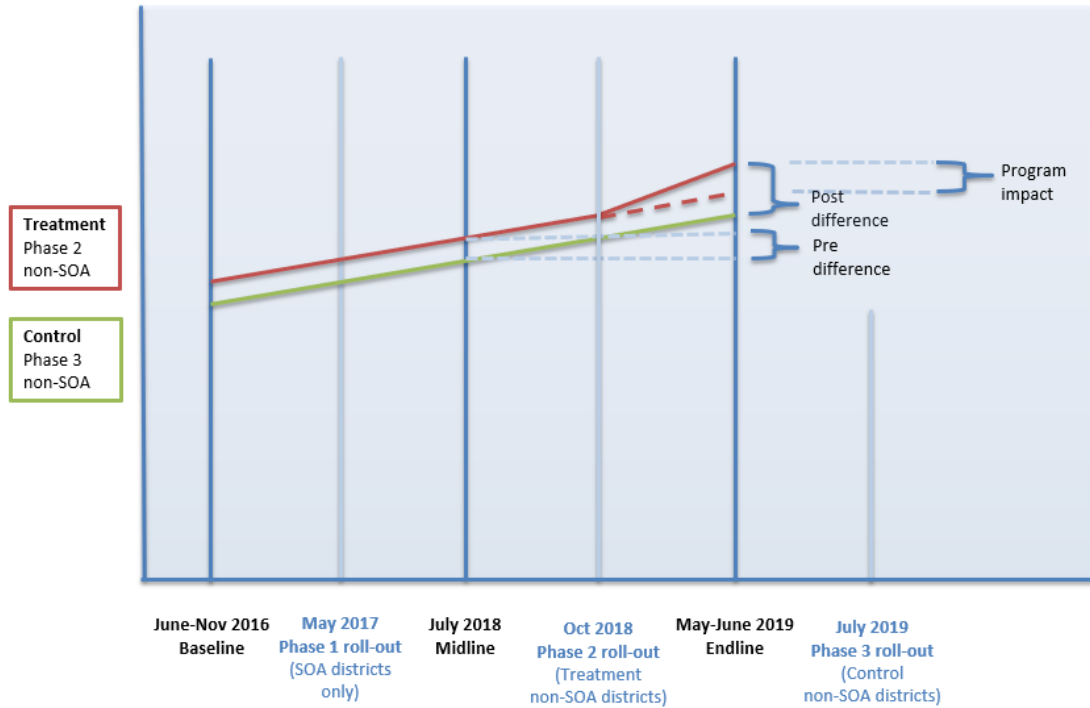
Province	Phase 1 (SOA)	Phase 2 (treatment)	Phase 3 (control)	Total
Banteay Meanchey	4		4	8
Battambang and Pailin		8	4	12
Kampong Cham	6	2		8
Kampong Chhnang		4	2	6
Kampong Speu		4		4
Kampong Thom		2	4	6
Kampot and Kep		2	4	6
Kandal		4	4	8
Kratie			4	4
Mondul Kiri	2		2	4
Oddar Meanchey	2		2	4
Phnom Penh		6	8	14
Prey Veng	2	6	4	12
Pursat	2	6		8
Ratanakiri	2		2	4
Siemreap	8		8	16
Sihanoukville			2	2
Stung Treng	2		2	4
Svay Rieng		6	2	8
Takeo	8		8	16
Tbong Khmum	4	4	2	10
Total	42	54	44	140

The impact evaluation uses a difference-in-difference design that compares the change between a baseline and follow-up time in districts that received the intervention versus districts that did not receive the intervention. The assumption to identify the intervention's impact is that non-intervention districts would have experienced similar changes as the intervention districts, if the latter had not received the intervention. That is, the evaluation assumes that the non-intervention districts represent a good counterfactual for the intervention districts.

As noted, the intervention was assigned to three groups of districts. The first phase was purposefully reserved for SOA districts, that are likely very different from other ODs. Therefore, the phase 2/3 districts by themselves are not ideal counterfactuals for the phase 1 ODs. However, the counterfactual for comparing phase 2 and phase 3 districts is strengthened by a random assignment of these districts (and hence clinics and households) to the intervention and non-intervention groups. The power calculation of samples is outlined in **Annex B** and **Annex C**. The list of provinces, ODs, and health centers is outlined in **Annex D**.

Figure 2.3 shows how the difference-in-difference analysis could be done on the phase 2/3 districts, using baseline, midline and endline data.

Figure 2.3 Difference-in-Differences to Evaluate Impact of SDGs at Endline



Sample Design

The baseline sample was stratified by L2 score (OD and facility), distance from facility (villages) and HEF status (households). For more details on the stratification and randomization process and sampling representativeness, refer to **Annex E**.

2.4 Baseline Data Collection

Sample

The SDG baseline survey was conducted from June to July 2016 (supply side) and September to November 2016 (demand side). The total number of interviews completed was:

- 140 health facilities with facility assessment and medical record review, 545 health worker interviews, and 1053 patient exit interviews in 140 villages with community interview
- 70 OD Director interviews
- 140 villages with community interviews
- 2,506 households (HEF and non-HEF) with household survey and mother/child survey. Households were eligible for the survey if at least one household member was a woman 15-49 years old who has had at least one pregnancy event (live birth, stillbirth, miscarriage and/or abortion) in the 24 months directly preceding the survey.

These numbers deviated from what had been the original plan, as shown in **Table 2.3**.

Table 2.3 Planned and Actual Data Collection

Unit of observation	Original plan	Actual	Completed
Operational district offices (across 23 provinces)	70	70	69
Health facilities (across 23 provinces)	140	140	140
Health workers (4 per facility)	560	550	546
Patient exit interviews (4 antenatal patients, 4 under-5-child patient caregivers)	1,120	1,061	1,053
Medical record review (4 records per facility)	560	560	560
Households (20 per facility catchment area: 10 HEF & 10 non-HEF)	2,800	2,506	2,474
Community (2 per operational district)	140	140	140

The achieved sample sizes for health workers and patient exit interviews is low because of the low patient flow at some of the health facilities visited and also a few respondent refusals. As for the achieved sample size for households, a few of the villages (those below 200 households) in the sample did not have sufficient number of eligible households to fulfill all sample groups in addition to refusal and absence of a few respondents on the survey days.

Survey Instruments

The survey instruments are based on those proposed by the Health Results and Innovation Trust Fund (HRITF) Evaluation Toolkit, with the exception of the OD instrument, which was newly developed for this evaluation. The key sections for each instrument are listed in **Annex E**.

2.5 Ethics

Ethical clearances for this evaluation study were duly obtained from the National Ethics Committee for Health Research (NECHR) and participation in the study was voluntary and with informed consent.

3. Findings

This chapter discusses the analysis of survey responses from seven different data collection instruments, conducted as part of the baseline study, focused on supply as well as demand dimensions of the health system in Cambodia. On the supply side, instruments captured responses from health centers (usually involving the heads of health centers as the respondents, supported by their teams), from health workers, and from supervising agencies at the operational district level. The demand side surveys were implemented at the overall household level, including an additional instrument to capture the maternal and child health dimensions, at the community level, as well as exit surveys of patients using health facilities. Each of the first seven sections below summarizes the key findings and provides a description of the results from each of these seven tools.

In order to complement the baseline findings and to provide a more comprehensive view of the health system prior to the H-EQIP, two additional analyses were incorporated using the L2 quality assessment scores and HEF utilization survey results, both of which pertain to a period just prior to the launch of H-EQIP. The L2 quality assessment scores were analyzed to measure any existing differences based on the SOA and HEF status, in the health center performance on clinical vignettes. In theory, being designated as an SOA does entail a different degree of investment and incentives, which would render these facilities different in terms of infrastructure, process and outcomes. Though the L2 dataset by itself is not part of the impact evaluation, it was analyzed in detail for a better understanding of the status quo of health facilities at the time of the baseline. The analysis uses different combinations of SOA and HEF status for additional insights in understanding the baseline variations, and possibly also for interpreting the midline and endline results.

3.1 Health Facility

Key Findings

- On average, about 21 percent of the health facility's total income per month came from HEF reimbursement; 23 percent of health facilities with HEF income revealed that HEFs were usually or always late.
- The average amount of funding received from user fees, HEF, and MOH per month was approximately 11 million Riels, 6 million Riels, and 18 million Riels, respectively (1 million Riel= approximately US\$250).
- Health centers with lower HEF volume are located closer to higher-level facilities. Eighty percent of referral hospitals are located beyond the 5km radius from the health center.
- 99 percent of high-HEF volume facilities reported that they offer delivery services in general, compared to 77 percent of low-HEF volume facilities.
- About 58 percent of all facilities reported having had electric power outages in the last seven days. The average duration of absence of electric power in the last seven days was 5.8 hours.
- Almost one-fourth of facilities had rainwater (12 percent) and unprotected wells (10 percent) as primary water sources.
- Fifty percent of facilities owned a functioning computer, of which 44 percent had access to internet connection.
- Overall, 86 percent of health centers had access to working vehicles; 23 percent had an ambulance owned by the facility, while 81 percent had an ambulance owned by OD. The likelihood of having an ambulance owned by the facility was higher at high-HEF volume facilities (41 percent) than at low-HEF volume facilities (7 percent).
- 28 percent of respondents chose health facility head or health facility staff as entities with the authority to procure drugs and equipment for the facility. The most selected entities were NGO staff (62 percent) and local government (43 percent).
- 33 percent of respondents disagreed or strongly disagreed on having choice over types of services provided at the facility. Twenty-seven percent disagreed or strongly disagreed on having enough authority to obtain the resources for the facility, namely drugs, supplies or funding.

There were 140 facilities surveyed in the target areas from 23 provinces and 70 operational districts. The assessment was carried out over a period of 24 days from June 22 to July 15, 2016. These facilities were classified by the actual HEF reimbursement for May 2016, based on the Cambodia HMIS into two equal groups of 70 health facilities with low and high HEF volumes (lower- and upper-half of the median of HEF reimbursement, US\$111.30). They were also classified by start of the HEF program into two facility groups as before or since 2015, so correspondingly had two groups of 65 and 75 health facilities. The sample weights of the health facility, which were stratified by average and variability of L2 scores of each OD, are applied in all calculations.

According to the HMIS, the average total patients, pregnant women, and under-5 patients were respectively 523, 100, and 140 in the last completed calendar month (or around 18 total patients, four pregnant women, and five under-5 patients per day). About 38 percent and 9 percent of all facilities had more than 500 and 1,000 total patients respectively in the last month. Specifically, 51 percent of facilities had 101-500 total patients, 29 percent had 501-1000 total patients, and 9 percent had more than 1,000 total patients.

In less than 20 percent cases, the referral facilities³ were located within a 5km radius from the health center, another 20 percent within 6-10 km, and about 60 percent beyond 11km (**Figure 3.1**). It is interesting to note that more than 70 percent of health centers with higher HEF claims (greater than or

³ District/provincial referral hospitals or national hospitals

equal to median) (henceforth “high-HEF”) are located further than 11km from higher-level facilities, whereas this was 56 percent in the case of those with lower HEF claims than median (henceforth “low-HEF”) (Figure 3.2). Therefore, health centers with lower HEF volume seem to be located relatively closer to higher-level facilities, with 13 percent of them within a radius of less than 1km, compared to 4 percent of high-HEF facilities under 1km. The relatively shorter distance between facilities may act as an enabler for patients to easily access secondary or tertiary health services.

Figure 3.1 Distance to the Nearest Higher-Level Health Facility from Health Centers (in percent)

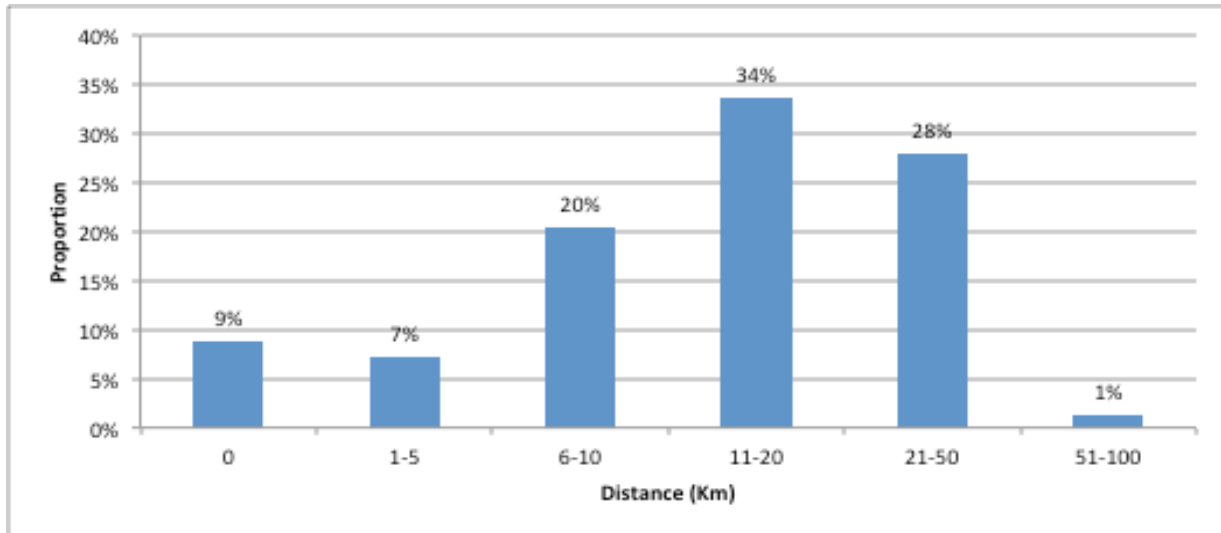
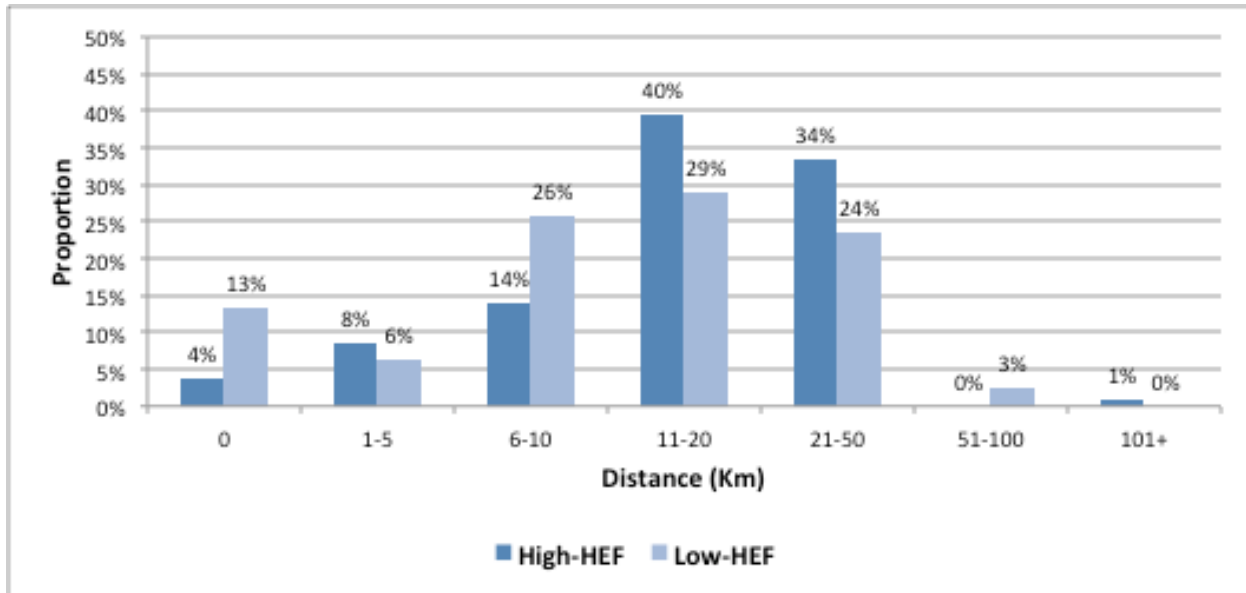


Figure 3.2 Distance to the Nearest Higher-Level Facility from High-HEF Volume and Low-HEF Volume Facilities (in percent)

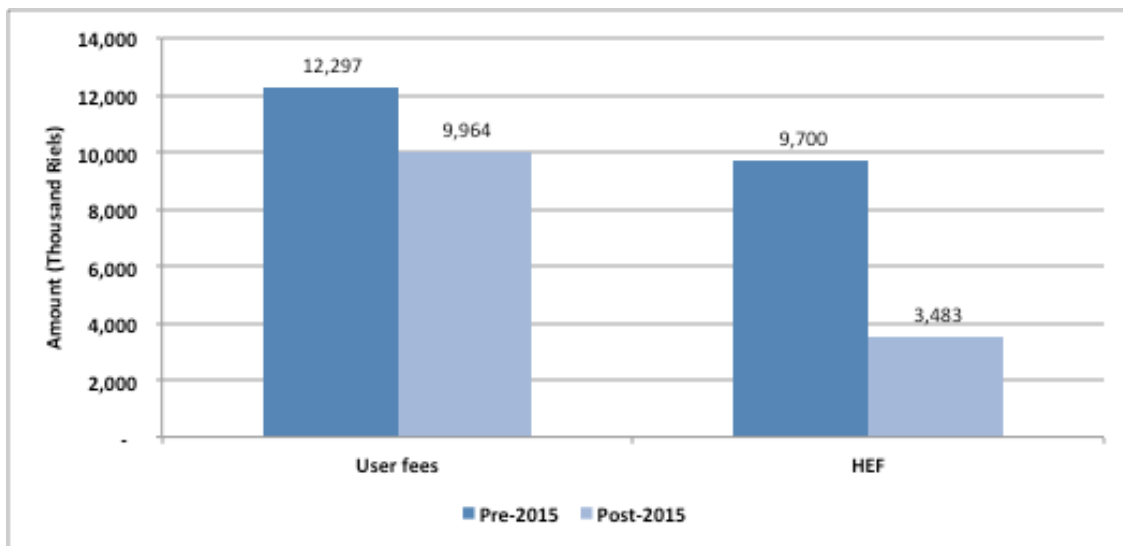


There are degrees of financial dependence on HEF, but a number of facilities experienced delays in receiving HEFs. On average, about 21 percent of a health facility’s total income in the last month came

from HEF. Furthermore, 11 percent of all health facilities mentioned that their HEF income was more than half of total income. Unfortunately, as of mid-2016, 23 percent of health facilities with HEF income revealed that HEFs were usually or always late. About 34 percent of health facilities in the upper half of the median of HEF volumes and about 40 percent of health facilities commissioned before 2015 had experienced delays in receiving HEFs. Almost all the facilities with HEF income (98.9 percent) received HEF through a bank account; so in principle HEF should reach the facility’s account on time, unless there are issues in upstream funding (and this was indeed the case in the past, where different phases of the project cofinancing had temporary delays in availability of funds at the national level). Almost all HCs identified user fees (96 percent) and HEF (92 percent) as their main source of income (multiple responses were permissible for this question), while approximately half of respondents identified MOH (47 percent). The average amount of funding received from user fees, HEF and MOH, in the month prior to the survey was approximately 11 million Riels, 6 million Riels, and 18 million Riels, respectively.⁴

According to the volume of HEF and duration of HEF operations, however, facilities reported having received different amounts of user fees in the month prior to survey. For example, as expected, high-HEF facilities reported higher HEF income (10.6 million Riels) and user fees (13.5 million Riels) than low-HEF facilities’ HEF income (1.7 million Riels) and user fees (8.6 million Riels). A similar trend was seen between pre-/post-2015 HEF adopters: pre-2015 HEF adopters reported higher HEF income (9.7 million Riels) and user fees (12.3 million Riels) than post-2015 HEF adopters’ HEF income (3.5 million Riels) and user fees (10 million Riels) respectively (**Figure 3.3**).

Figure 3.3 Amount of User Fees and HEF In a Month Prior to Survey (In thousand Riels)



Overall, 86 percent of health centers had access to working vehicles. Among these facilities, 23 percent had an ambulance owned by the facility, while 81 percent had an ambulance owned by OD. The likelihood of having an ambulance owned by the facility was noticeably different between high-HEF facilities (41 percent) and low-HEF facilities (7 percent) (**Figure 3.4**). There was also a difference between

⁴ 1 million Riel= approximately US\$250

pre-2015 HEF adopters (30 percent) and post-2015 adopters (17 percent), although to a lesser degree (Figure 3.5).

Figure 3.4 Proportions of High-HEF Volume and Low-HEF Volume Facilities with Ambulance

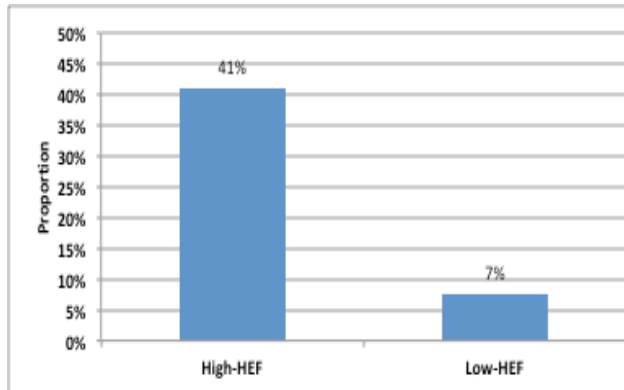
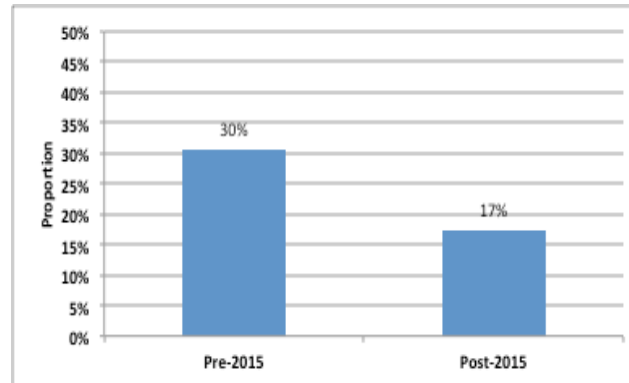


Figure 3.5 Proportions of Pre-2015 HEF and Post-2015 HEF Adopters with Ambulance



In addition, the average number of ambulances among these facilities also differed according to HEF volume and HEF adoption year. On average, high-HEF facilities had 1.5 ambulances, compared to 1 ambulance for low-HEF facilities; pre-2015 HEF adopters had 1.6 ambulances, compared to 1.1 ambulances for post-2015 HEF adopters. **These facilities with more experience with HEF patients could demonstrate a positive impact and prompt procurement of vehicles to meet specific services in a timely manner.**

Even for very common services such as immunization and maternity delivery, high-HEF volume facilities and early adopters of HEF were better placed. All health centers with high-HEF volume and those that started HEF operation prior to 2015 provided immunization services. However, just about 90 percent of facilities that started HEF operation after 2015 and had lower volume of HEF provided immunization services for the community. Similarly, there were a higher proportion of facilities providing delivery services at high-HEF facilities and pre-2015 HEF adopters, although the differences were larger in both cases. Ninety-nine percent of high-HEF facilities were providing delivery services, compared to 77 percent of low-HEF facilities (Figure 3.6), and 95 percent of pre-2015 HEF adopters were providing delivery services, compared to 81 percent of post-2015 HEF adopters (Figure 3.7).

Figure 3.6 Proportions of High-HEF and Low-HEF Volume Facilities Providing Delivery Services

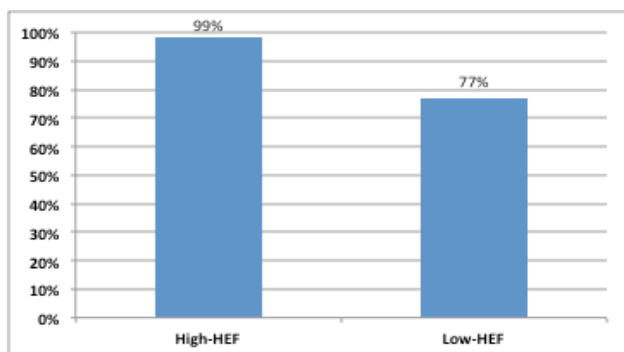
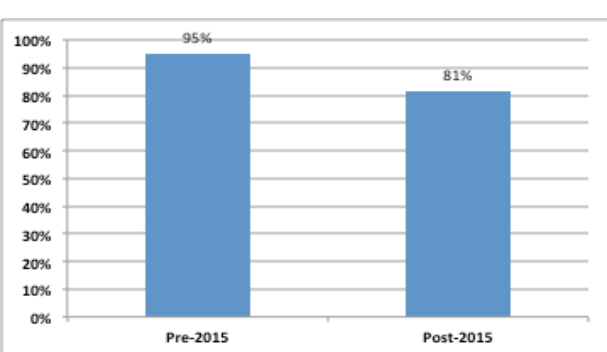
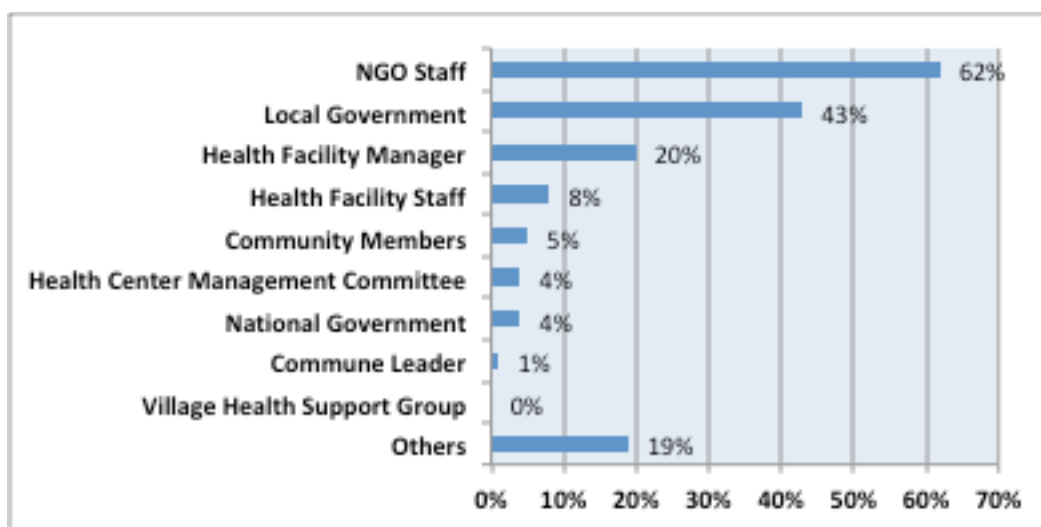


Figure 3.7 Proportions of Pre-2015 HEF and Post-2015 HEF Adopters Providing Delivery Services



Sixty-two percent of respondents indicated nongovernmental organization staff as an entity with the authority to procure drugs and equipment for the facility; 43 percent indicated local government (Figure 3.8). Health facility manager and health facility staff were chosen by 20 percent and 8 percent respectively of the respondents, showing that about one-third of the respondents, who are health facility head or staff themselves, expressed their ability to procure drugs and equipment at the time of the baseline.

Figure 3.8 Average Independent Proportion of Entities with Authority to Procure Drugs and Equipment (in percent)



Infrastructure

A high number of health facilities had challenges with available infrastructure, especially those that were built a while ago. The last major investment in infrastructure in 16 percent of the health facilities was more than 10 years ago. For health facilities commissioned more than 10 years ago, almost one-fourth had the last major investment in the infrastructure at least 11 years ago. This suggests that several older facilities (which tend to serve more patients than the newer facilities) need to find resources to implement major improvements in infrastructure.

It is critical to fix problems of electricity outage and water scarcity. About 58 percent of all facilities reported having electric power outages in the last seven days. The average duration of absence of electric power in the last seven days was 5.8 hours. About 8 percent of health facilities had no water available in the last seven days. The average duration of non-availability of water in the last seven days was 43 hours. Almost one-fourth of facilities had rainwater as a primary water source (12 percent), unprotected well (10 percent), and surface water such as lake, river, or stream (2 percent).

Transportation services for patients were limited. Twelve percent of large volume facilities (defined by their size being larger than the median of total patients in the last month) faced transportation difficulties in serving patients. Six percent of facilities reported having no transportation for patients. The average unavailability of transportation for health care services was about a day for all facilities with transportation shortage.

Access to computers and internet connectivity would be very useful and efficient for the health facilities, even though they are not yet expected to use Patient Management and Registration System (PMRS) at

the health center level. Fifty percent of facilities owned a functioning computer. However, connectivity remained erratic. Only 44 percent of those that reported owning a computer had access to internet connection. For facilities with internet connection, about 27 percent reported having no internet connection in the last seven days.

Almost all facilities had a reception room and a waiting area (98 percent and 99 percent, respectively). However, only 74 percent of all facilities have a room with auditory and visual privacy for patient consultations. Only half of the facilities (49 percent) had a minor surgery theater. Furthermore, 16 percent of facilities had no electric fan or air-conditioner, 8 percent had no observation bed, and 18 percent had no separate wards for ANC and deliveries.

The average number of observation beds, beds for general medicine, and beds for ANC/delivery were 3.7, 2.2, and 2.8, respectively. All facilities had a functional toilet facility available for patients, but almost one-fifth (19 percent) of the toilets were rated somewhat unclean or very unclean. Only 17 percent of all facilities provide separate toilet facilities for female and male patients.

Although accommodation had been provided for health workers required to be on call in most HCs, 12 percent of facilities reported having no accommodation for health workers on call during non-routine hours, for example, during night shift. This was the case despite the fact that all facilities are expected to provide round-the-clock services all the time or sometimes (93 percent and 7 percent, respectively).

Most of the national protocols are available in about 80 percent of HCs. Some national protocols are, however, less available, and available in less than 50 percent of facilities. These include the protocol for malaria diagnosis and treatment, protocol for reducing unsafe abortion morbidity/mortality, prevention of mother to child transmission of HIV (PMTCT) guidelines, HIV treatment (antiretroviral therapy, ART) guidelines, HIV treatment (antiretroviral therapy, ART) for children/infants guidelines, national list for essential drugs, protocol for drug procurement, detecting and reporting adverse drug or vaccine reaction, and national health strategy.

Autonomy

No respondents disagreed or strongly disagreed on having autonomy on assigning tasks to staff as needed or on OD's support to the facility to make decisions (**Table 3.1**). On the other hand, 33 percent of respondents disagreed or strongly disagreed on having choice over types of services to be provided at the facility. Similarly, 27 percent disagreed or strongly disagreed on having enough authority to obtain the resources for the facility, namely drugs, supplies or funding.

Table 3.1 Autonomy on Decision-Making and Authority In the Facility (in percent)

Autonomy	All HFs	HEF claim		HEF started		Size (total patients)	
		>=median	<median	since 2015	pre-2015	>=median	<median
Flexibility to allocate facility budget according to how it is needed	6	9	3	3	11	6	6
Flexibility to assign tasks and activities to staff as needed	0	0	0	0	0	0	0
Operational District supports facility's decisions and actions	0	0	0	0	0	0	0
Have choice to allocate staffs for tasks	1	3	0	0	3	3	0
Have choice over what services are provided in the facility	33	37	29	33	31	29	35
Have enough authority to obtain the resources as needed (drugs, supplies, funding) for facility	27	31	24	24	32	26	28
Policies and procedures for doing things are clear	6	13	1	9	2	14	0
Policies and procedures for doing things are useful tools for the challenges in providing services	3		0	5	0	7	0
OD provides adequate feedback about my job and the performance of my facility	1	1%	0	0	1	1	0

Note: Answers = Disagree or Strongly Disagree

3.2 Health Workers

Key Findings

- Eighty-eight percent of health workers expressed the need for more training for their current job.
- Eighty-five percent of health workers mentioned that they received incentives. The midwifery scheme appeared to provide the highest amount of incentive, followed by performance bonus and fixed lump sum SDGs as the second and third source.
- Health workers showed strong satisfaction (82 percent) for the quality of medicine in the facility, in contrast to the low satisfaction (54 percent) on the quantity of medicine and equipment in the facility.
- Satisfaction on salary was at 37 percent. One-fourth of health workers showed satisfaction with their relationship with facility staff and local traditional leaders.
- Almost half (45 percent) of health workers showed they were currently engaged in other economic activities as their secondary job. The most common secondary job related to the medical sector was selling medicine or providing treatment at home (42 percent). The second most popular secondary job related to the medical sector currently engaged by health workers was working in a private clinic or conducting private practice (19 percent).

In all 546 health workers were interviewed in 140 health centers in 23 provinces of Cambodia. About 61 percent of the respondents were female. The average years of experience to be health providers since the completion of highest degree among them was about 11.3 years and the average length of working in the current facility was about seven years. Almost half of the respondents (47 percent) were midwives and nurses (29 percent) and almost all of them had a permanent contract (82 percent), followed by a fixed term contract (15 percent) and other types of contract. Most of the health workers received medical training from the Regional Training Center (56 percent) followed by the University of Health Sciences (25 percent) (**Table 3.2**).

Table 3.2 Demographic Information of Health Workers (in percent)

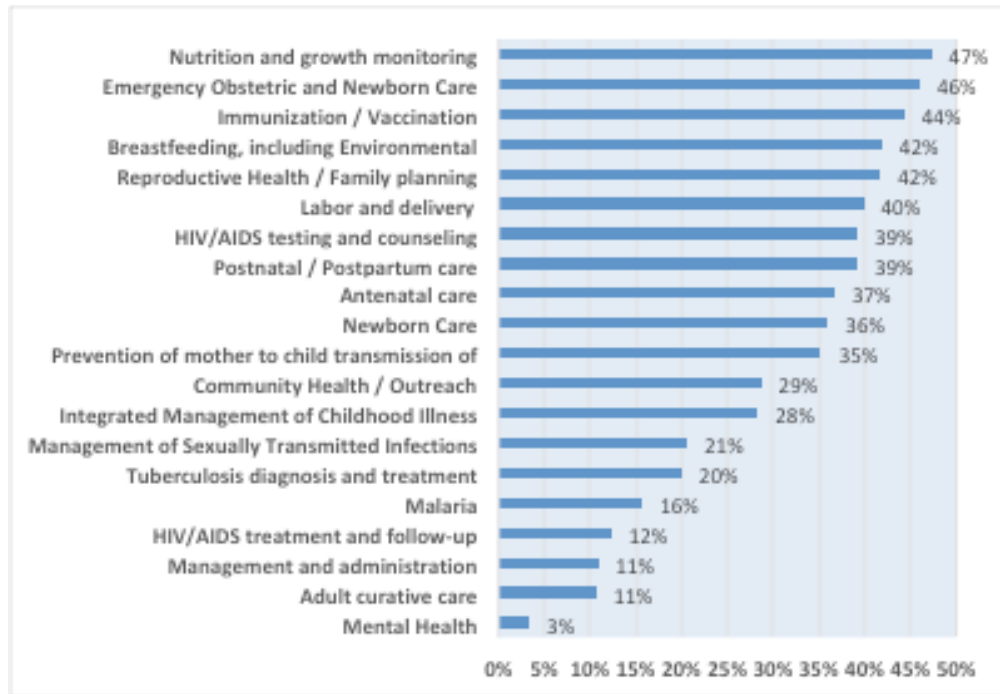
Position as health workers	Percent (n=546)
Midwife	47
Nurse	29
Others	8
Pharmacist	2
Nursing assistant	1
Doctor	1
Type of contract	
Permanent	82
Fixed term (six months and more)	15
Other	2
Where medical certificate was received	
RTC	56
University of Health Sciences	25
Private medical university	14
Other university	2
Other	2
At hospital/health center	1
Average years as health worker since completion of highest degree	11.3
Average years as health worker in this facility	7.1

Medical Training

Training received by health workers

In general, almost half the health workers had received training on mother and child health related courses (**Figure 3.9**). Around 44 percent to 47 percent of health workers had received training on immunization/vaccination, emergency obstetric care and nutrition, and growth monitoring. About 42 percent of health workers also mentioned that in-service training on breastfeeding and reproductive health (RH)/family planning (FP) were provided to them. Around 40 percent of health workers received training on postnatal care, HIV/AIDS testing and delivery related issues. Thirty-six percent of health workers received training on newborn care. It is interesting to note that only around 11 percent of health workers had mentioned receiving training on skills such as management and administration and only 3 percent had mentioned receiving in-service training on mental health.

Figure 3.9 Percentage of Health Providers who Received In-Service Training

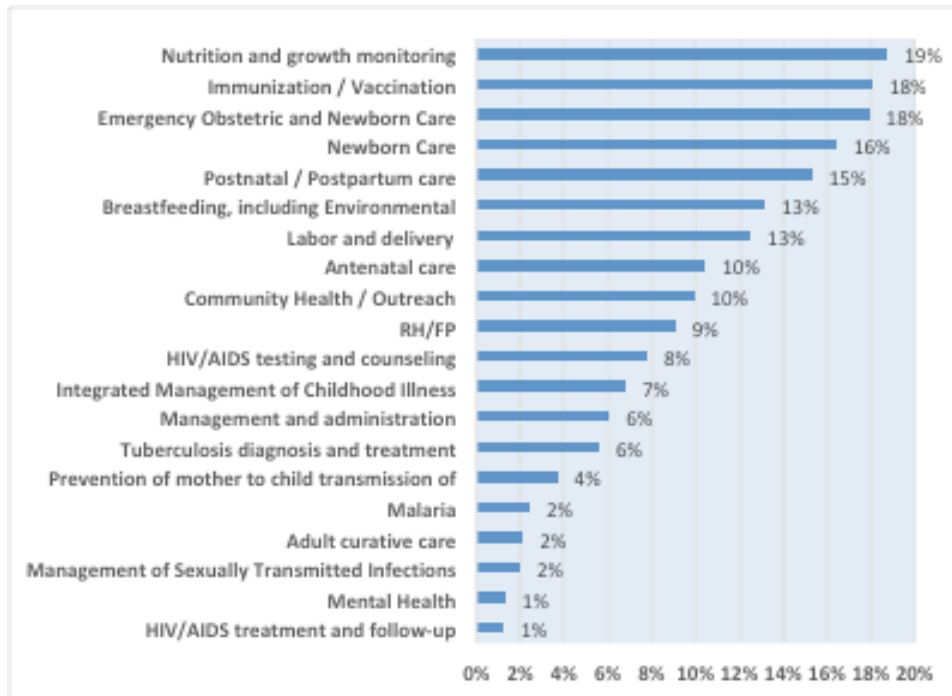


Training received by health workers in the last 12 months

When asked about the training received during 12 months prior to the survey, the percentage of health workers who mentioned receiving training within this period was quite low. Overall, less than 20 percent of health workers mentioned receiving training within this period.

The nutrition and growth monitoring course was the most common training received by health workers during this period; this was just slightly less than one-fifth of health workers being trained (**Figure 3.10**). Health workers who received training in the past 12 months on breastfeeding and immunization/vaccination were around 13 percent to 18 percent, respectively. About 10 percent to 15 percent of health workers also received training on antenatal care and postnatal care within this period. Again, only 6 percent of the health workers mentioned receiving training on management and administration in the 12 months prior to the survey and only one percent undertook training on HIV/AIDS treatment and mental health.

Figure 3.10 Types of Training Received by Health Workers in the Past 12 Months (in percent)



Looking at the training received by health providers across facilities on the status of HEF, the data shows that a higher percentage of health workers from the facility that had longer exposure to HEF and high volume of HEF claim tended to receive more training. These differences were seen clearly in the length of exposure to HEF scheme.

Overall, the facilities that commenced HEF services before 2015 tended to have a higher percentage of health workers who had received in-service training (**Table 3.3**).

The percentage of health providers who ever received training on nutrition and growth monitoring in high-HEF volume facilities was 23 percent; this was 8 percent higher compared to low-HEF volume facilities.

Health workers who received training on newborn care were around 11 percent higher in facilities with high-HEF volumes compared to their low volume counterparts. This percentage was around the same for in-service training on labor and delivery and postnatal care. Looking at the length of exposure to HEF, the percentage of health workers who received training on courses for newborns from facilities exposed to HEF before 2015 was around 22 percent; this was about 10 percent higher than facilities exposed to HEF since 2015.

Table 3.3 Percentage of Health Workers that Received Training in the Past 12 Months by HEF Status

	HEF Claim Volumes			HEF Commencement Date		
	High	Low	Difference	Before 2015	Since 2015	Difference
Nutrition and growth monitoring	23	15	8	21	17	5
Newborn care	22	11	12	22	12	10
Emergency Obstetric and Newborn care	22	14	8	22	15	6
Postnatal / Postpartum care	21	10	11	20	12	9
Labor and delivery	19	7	12	17	9	7
Immunization / Vaccination	19	18	1	22	15	7
Breastfeeding, including Environmental Breastfeeding	15	11	4	17	10	7
Antenatal care	12	9	4	13	9	4
Reproductive Health / Family Planning	12	7	5	10	8	2
Community Health / Outreach	11	9	3	14	7	8
HIV/AIDS testing and counselling	7	8	-1	10	6	4
Tuberculosis diagnosis and treatment	7	5	2	10	3	7
Integrated Management of Childhood Illness (IMCI)	5	8	-3	7	7	0
Prevention of mother to child transmission of HIV/AIDS (PMTCT)	5	2	3	7	1	5
Management and administration	5	7	-2	6	6	0
Management of Sexually Transmitted Infections (Gertler, #56)	3	1	3	4	0	4
HIV/AIDS treatment and follow-up (Antiretroviral therapy, ART)	2	1	1	2	0	2
Mental Health	2	1	1	3	0	3
Malaria	1	3	-2	3	2	1
Adult curative care	1	3	-2	1	3	-2

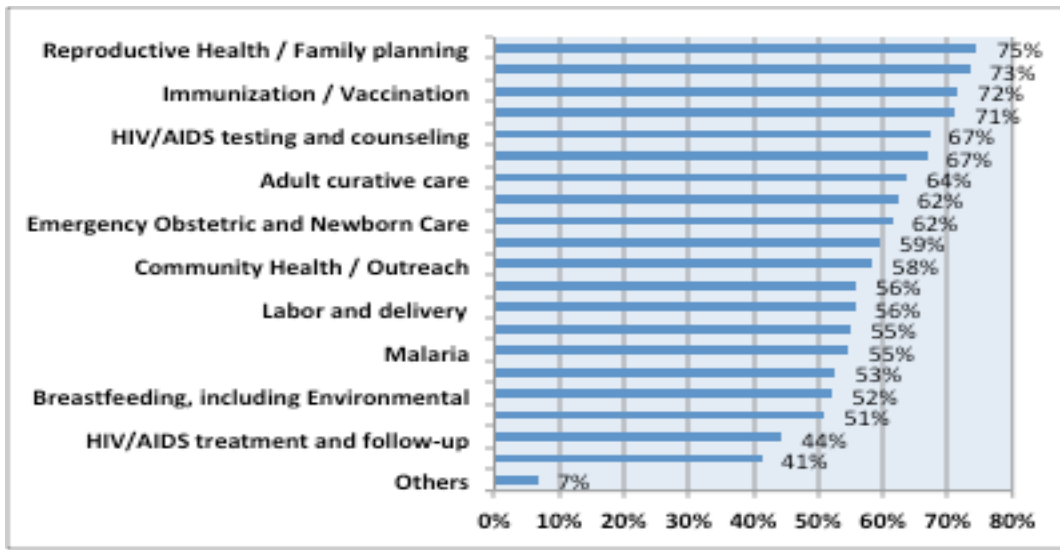
Training needs for current job

Around 88 percent of health workers interviewed said that they needed more training for their current job.

Among the trainings needed by health workers, reproductive health/family planning was the most popular theme as about three in four health workers insisted on training for this course. The training on IMCI and immunization and growth monitoring appeared to be the second and third most popular courses as around 73 percent of health workers claimed they needed training on these courses for their current job. Over half of the health workers (52 percent) also insisted that training on breastfeeding was needed for their current job .

Management and administration was the least sought after training course among health workers; around 41 percent of health workers claimed they needed more training on these skills to support their current job at the facility. This was not very different from the percentage of health workers who claimed they needed training on nutrition and growth monitoring (**Figure 3.11**).

Figure 3.11 Training Needed by Health Workers for their Current Job (in percent)

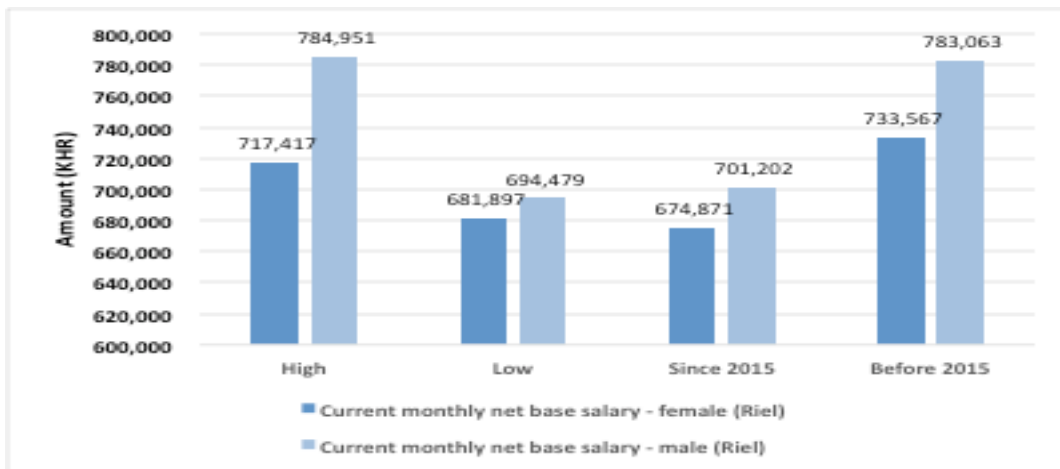


Incentive for health workers

Overall, health workers received about 722,000 Riel as their current net base salary⁵. This was about 699,000 Riel for female health workers and 736,000 Riel for male health workers. The monthly net base salary received by health workers fluctuated according to the duration of exposure to HEF and the amount of HEF claimed by the facility.

Health workers who were from facilities with high claims from HEF tended to receive higher current monthly net base salary than the lower claims from the HEF facility. This was about 785,000 Riel among male and 717,000 Riel among female health workers compared to 694,000 Riel and 682,000 Riel for male and female health workers in the lower HEF claimed facility, respectively. The longer the exposure to HEF the facility had, the more health workers received in higher current monthly net base salary (Figure 3.12).

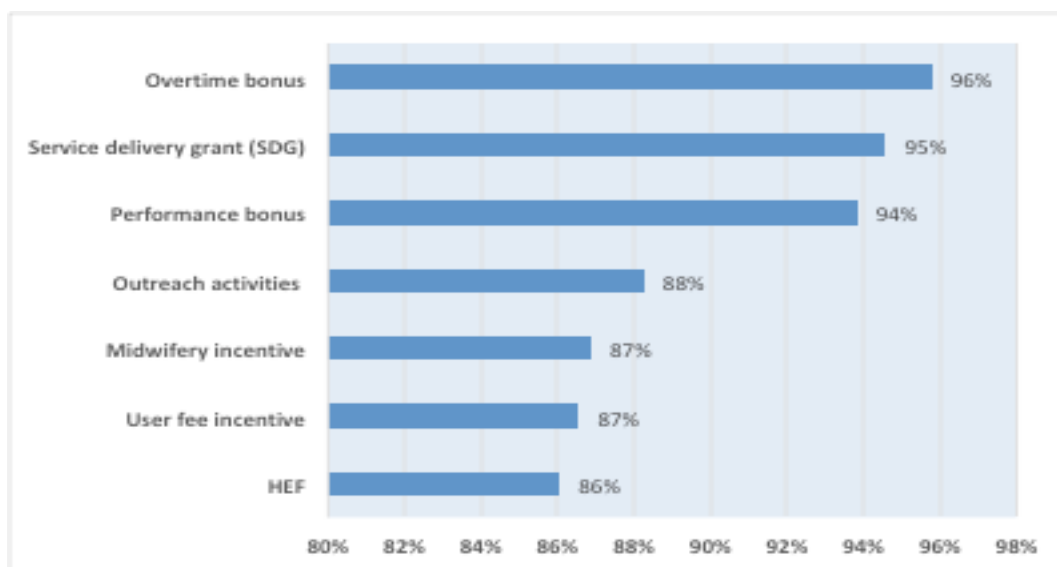
Figure 3.12 Amount of Current Monthly Net Base Salary Received by Male and Female Health Workers



⁵ In Khmer translation it is “net salary”

There are various sources of financial incentives received by health workers at the local facility. Health workers were asked if they had received any incentives in the month prior to the survey. Overall, the payment of incentives for health workers for the month prior to the survey looked promising. Over 85 percent of health workers mentioned that incentives were paid to them in the last one month prior to the survey. The most common incentives received by health workers were from overtime bonus and SDGs as almost all (95 per cent to 96 percent) of health workers had received incentives from these sources. The payment from HEF, user fees and midwifery scheme seem to be the less common incentives among other schemes as between 86 percent to 87 percent of health workers had received in the last month incentives from these sources (**Figure 3.13**).

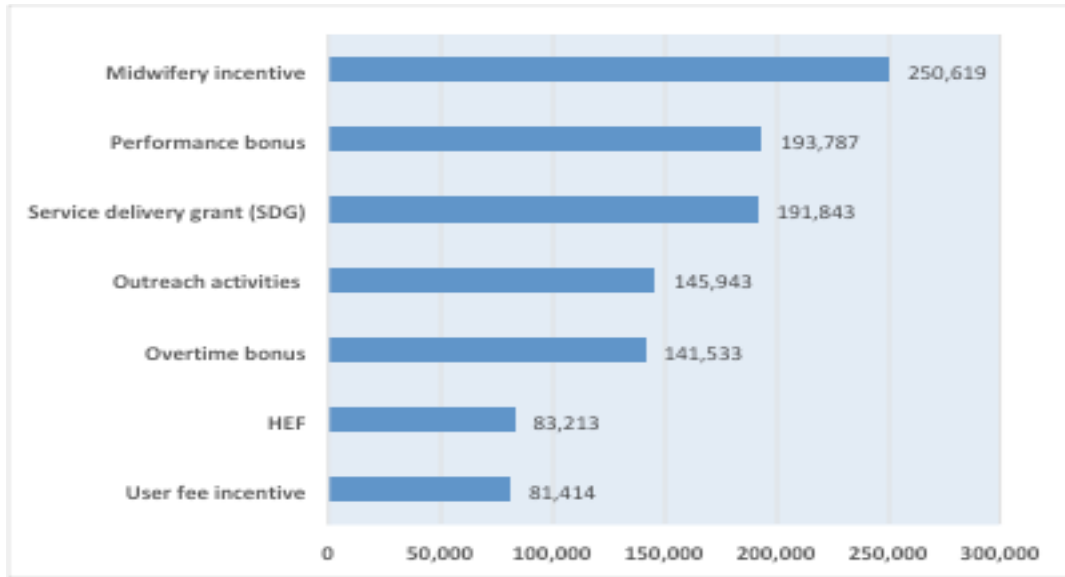
Figure 3.13 Sources of Incentives Received by Health Workers in the Last Month (in percent)



Amounts received from different incentives by health workers in the last month

Various schemes provided incentives for health workers at the local facility. Among the schemes that provided incentives to health workers during the last month, the midwifery scheme appeared to provide the highest amount of incentive. Performance bonus and SDGs were the second and third sources of the highest incentives for health workers during the last month. These were about 190,000 Riel for each scheme, respectively. User Fees was the incentive scheme that provided the lowest amount of incentive for health workers, followed by HEF. These ranged from about 81,000 Riel to 83,000 Riel, respectively (**Figure 3.14**).

Figure 3.14 Different Incentives Received by Health Workers during the Last Month (in Riel)



Health Workers' Satisfaction

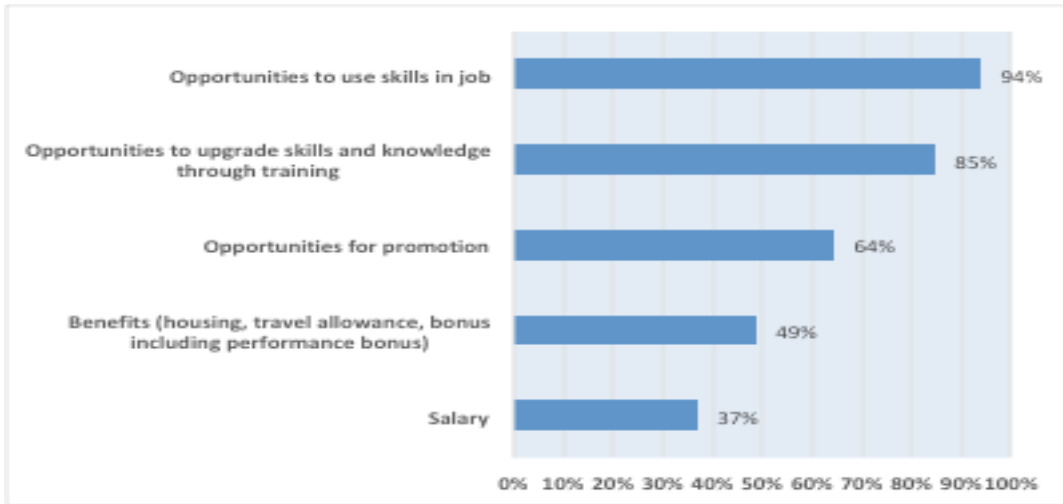
The satisfactions of health workers were centered around three major areas: incentive and benefits, infrastructure and availability of drug and equipment in the facility, and relationship with peers and local traditional leader.

Financial incentive and other benefits

Overall, the level of satisfaction among health workers was high, as 95 percent showed satisfaction in overall conditions at the facility. However, the level of satisfaction fluctuated across various categories.

In terms of financial incentive and benefits obtained, just slightly over one-third of health workers showed satisfaction on salary and less than half of them were satisfied with the benefits they currently received (**Figure 3.15**). Though the level of satisfaction among health workers on financial incentives and other benefits was low, health workers seemed to be satisfied with the opportunity to upgrade their skills and knowledge through training (85 percent) and opportunity to use those skills in their current jobs (94 percent).

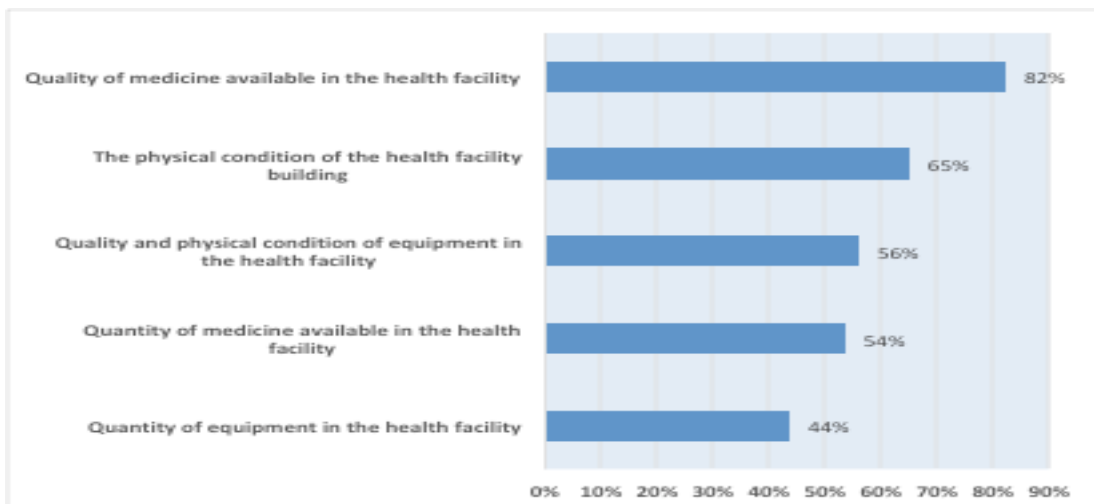
Figure 3.15 Level of Satisfaction for Incentive and Other Benefits Among Health Workers (in percent)



Infrastructure and availability of drugs and equipment

When asked about level of satisfaction for infrastructure and availability of drugs and equipment, health workers showed strong satisfaction (82 percent) with the quality of medicine in the facility. However, the level of satisfaction dropped dramatically for the quantity of medicine and equipment in the facility. Less than half (44 percent) of health workers showed satisfaction with the quantity of equipment in the facility and slightly over half (54 percent) of health workers were satisfied with quantity of medicine available in the facility; this was just about 10 percent higher than satisfaction with availability of equipment. When asked about the physical condition of equipment in the health facility and the facility building, just about 56 percent to 65 percent of health workers showed satisfaction with this aspect (Figure 3.16).

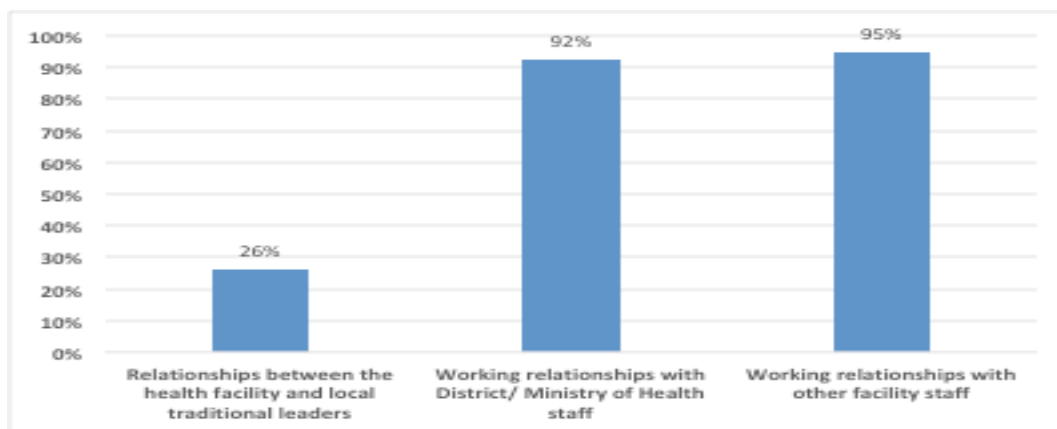
Figure 3.16 Level of Satisfaction with Infrastructure and Supply of Drugs and Equipment Among Health Workers (in percent)



Relationship with peers and local traditional community leaders

Health workers were asked about satisfaction with their working relationship with peers, including other health workers within the same facility, other personnel from central and district level and local traditional leaders. Health workers showed high satisfaction (95 percent) for relationship with their peers working in the same facility. This was not very different from satisfaction of facility staff with their relationship with district and central MOH staff. However, the relationship among facility staff and local traditional leaders seemed to be the least satisfactory as only one-fourth of health workers showed satisfaction with this relationship (Figure 3.17).

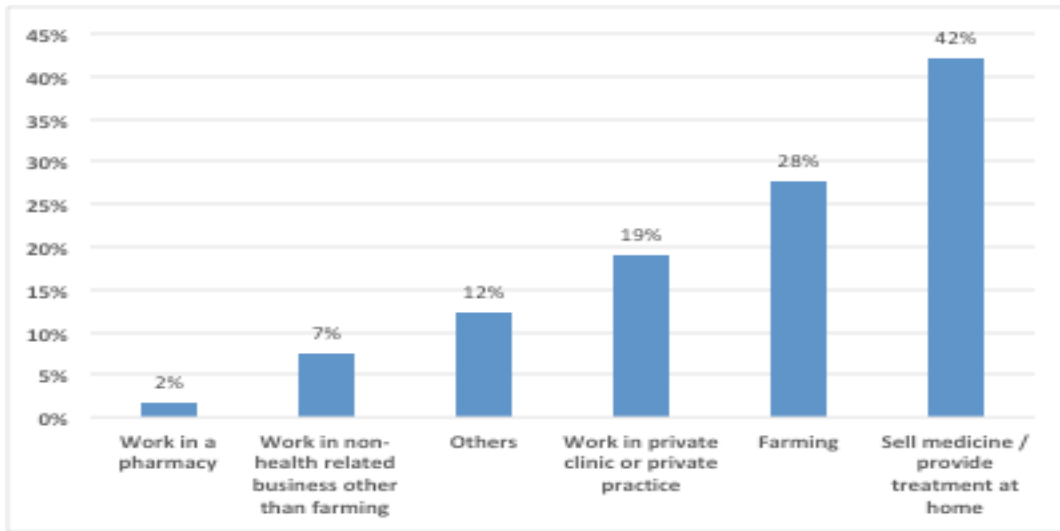
Figure 3.17 Level of Satisfaction of Health Workers toward Relationship with Peers (in percent)



Health Workers' Secondary Job

Almost half (45 percent) of health workers were currently engaged in other economic activities as their secondary job. The most common secondary job related to the medical sector was selling medicine or providing treatment at home, which accounted for almost half (42 percent) of the secondary job of health workers. The second most popular secondary job related to the medical sector currently engaged by health workers was working in a private clinic or conducting private practice (19 percent). Working in a pharmacy was the least popular secondary job among health workers (Figure 3.18). This may be due to the likelihood that health workers would engage in providing treatment at home in combination with selling medicine. It was also likely that a “proper” pharmacy was not located in the village but instead was commonly located in the district town.

Figure 3.18 Types of Secondary Job held by Health Workers (in percent)



3.3 Patient Exit Survey

Key Findings

- Eighty-six percent and ninety-five percent of total ANC patients were measured for weight and blood pressure, respectively.
- HEF patients received more laboratory services than non-HEF patients: blood sample (66 percent HEF, 27 percent non-HEF), urine sample (43 percent HEF, 8 percent non-HEF).
- Ninety-nine percent of the caregivers of children under 5 came to the health center without any referrals. One percent were referred by a Village Health Support Group worker.
- Ninety-eight percent of the caregivers of children under 5 were asked to give the age of the child, 73 percent had the child weighed, 7 percent had the height of the child measured and 48 percent had the child physically examined.
- Ninety-nine percent of the caregivers of children under 5 received medicine or prescriptions at the health facility during their visit.
- On average, the distance from the household to the facility was 3.2km.
- Forty-one percent of HEF cardholders and 69 percent of non-HEF cardholders reported using a private motorcycle as the primary mode of transportation to visit the health facility.
- The cost of traveling one-way to the health facility on an average was around 3,614 Riels. Thirty-four percent of HEF cardholders reported being reimbursed for some of the transport costs.
- The average waiting time for HEF cardholders was six minutes and for non-HEF cardholders five minutes.
- On average, the patients reported paying in total around 1,293 Riels for the visit, not including transportation costs (HEF cardholders around 614 Riels, non-HEF cardholders paid 1,451 Riels).
- Fifty-one percent of the non-HEF cardholders agreed that the Traditional Birth Attendants provided good quality services in the community (as compared to 35 percent of HEF cardholders); fifty-six percent of the HEF cardholders disagreed with this (as compared to 29 percent of non-HEF cardholders).

As part of the baseline survey, exit interviews were conducted with a total of 1,053 patients of which 179 were HEF cardholders and 873 were non-HEF cardholders. Eighty-two percent of HEF cardholders interviewed owned land with an average monthly household income of 831 thousand Riel. In comparison, 75 percent of non-HEF cardholders interviewed owned land with an average monthly household income around 1,111 thousand Riel.

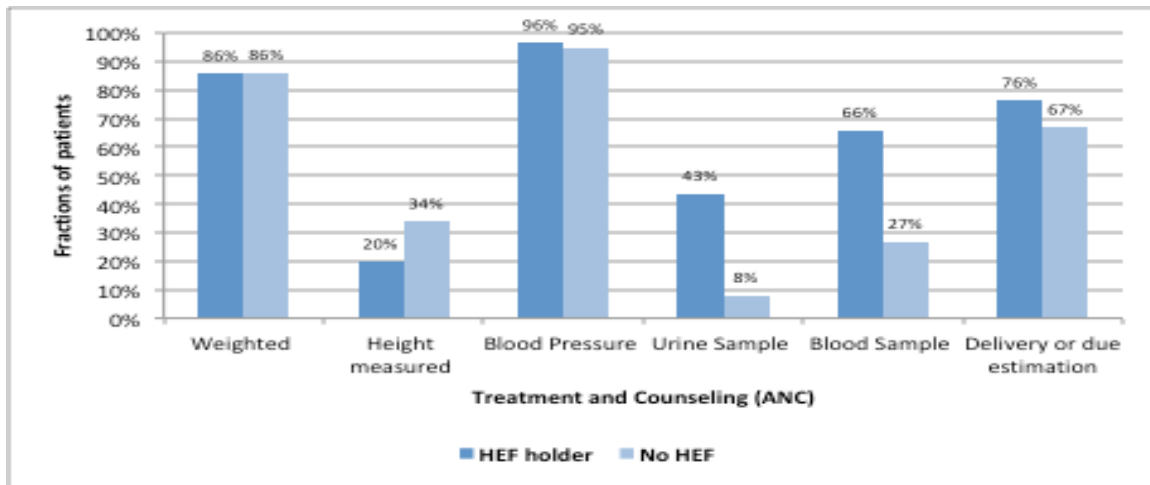
A majority of the respondents, around 60 percent, selected for the patient exit interviews received care for children under 5 while the remaining 40 percent received ANC treatment. It is interesting to note that while all of the HEF cardholders had the HEF card, all of the non-HEF cardholders had a health insurance card and could also access the hospital or health center for free.

ANC Treatment and Counseling

Hundred percent of the respondents were carrying an antenatal card or immunization card on their visit to the hospital or health center. Of the patients who received ANC treatment, 9 percent of HEF cardholders and 43 percent of non-HEF cardholders were first time pregnant; and for around 54 percent of HEF cardholders and 40 percent of non-HEF cardholders, this was their first antenatal visit to the facility for this pregnancy.

Of the patients who received ANC treatment during this antenatal care visit to the health facility, 86 percent of the respondents were weighed and 95 percent were measured for blood pressure. There was, however, a noticeable difference between the HEF cardholders and the non-HEF cardholders with regard to giving their urine and blood sample (**Figure 3.19**).

Figure 3.19 Treatment and Counseling (ANC) during Health Facility Visit (in percent)

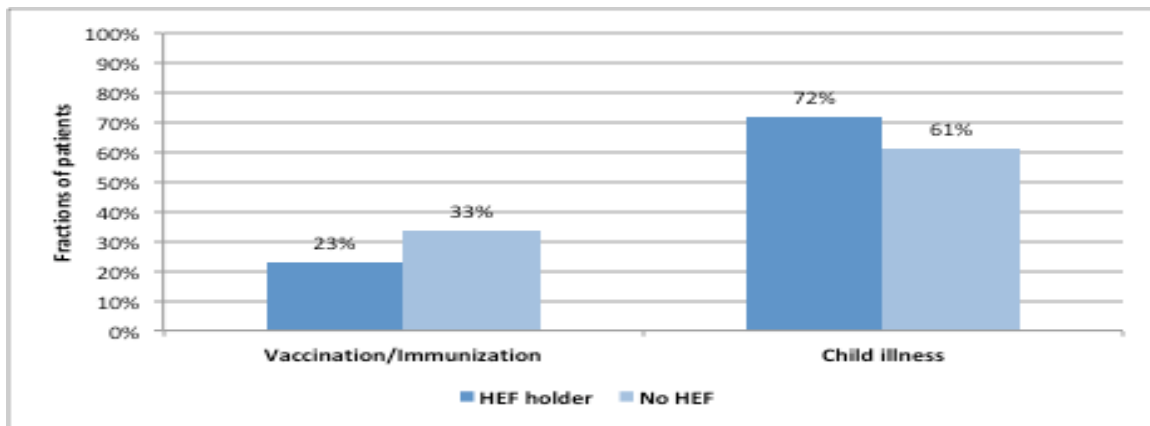


On advice of the health worker with regard to what to eat during pregnancy, 92 percent of the patients receiving ANC treatment were advised to eat green leafy vegetables, 49 percent to eat meat and poultry, 40 percent to eat fruits and nuts and 12 percent were advised to have milk.

Treatment and Counseling for Children Under 5

Out of the patients visiting the health center for receiving treatment for children under 5, the findings report found that 63 percent visited the health center for child’s illness, 31 percent visited for vaccination/ immunization, 4 percent for baby check-up and the remaining 1 percent for child growth monitoring (Figure 3.20).

Figure 3.20 Purpose of Visit for Treatment and Counseling for Children under 5 (in percent)

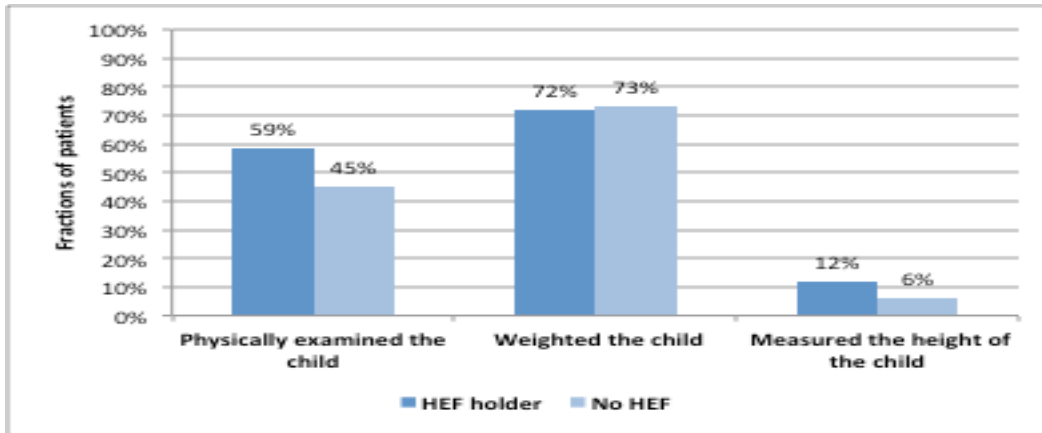


It was heartening to learn that around 99 percent of the patients receiving care for children under 5 came to the health center on their own without any referrals and only 1 percent of the sample reported being referred by a Village Health Support Group (VHSG) worker.

During the visit for treatment and care for children under 5, 98 percent reported the health facility asked the age of the child, 73 percent reported that the child was weighed, 7 percent reported that the height of the child was measured and 48 percent reported that the child was physically examined. While

there was not much difference between the HEF cardholders and non-HEF card holders on the first three indicators, on the last one, 59 percent of HEF cardholders who visited the health facility for treatment and care for children under 5 reported that the child was physically examined at the health facility in comparison to 45 percent of the non-HEF card holders (**Figure 3.21**).

Figure 3.21 Treatment and Counseling for Children under 5 (in percent)

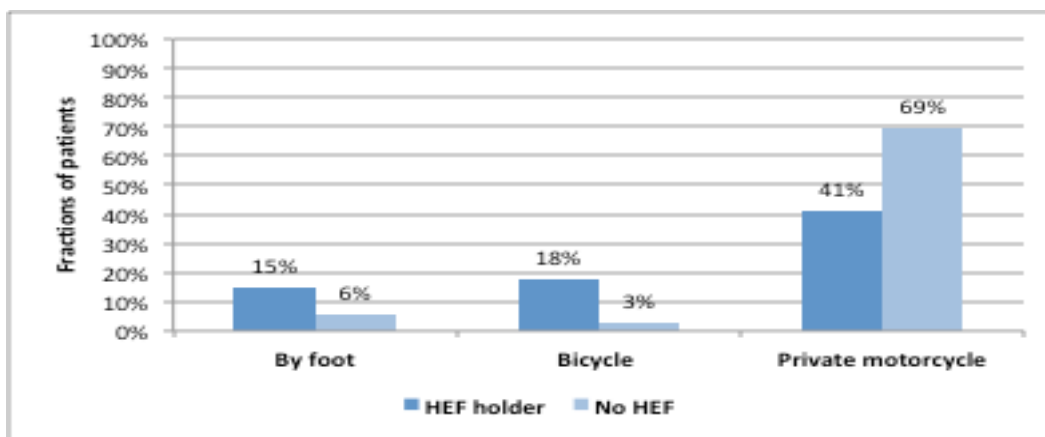


Ninety-nine percent of those visiting the health facility for care and treatment for children under 5 also reported that the child received medicine or prescriptions at the health facility during this visit.

Patient Travel and Expenditure

On an average, the distance from the household to the facility was around 3.2 km (3.7 km for HEF cardholders and 3.2 km for non-HEF cardholders) and it took around 14.3 minutes to reach the health facility from the house (15.1 minutes for HEF cardholders and 14.1 minutes for non-HEF cardholders). Majority of the patients, around 64 percent (41 percent of HEF cardholders as opposed to 69 percent of non-HEF cardholders) reported using a private motorcycle as the primary mode of transportation to get to the health facility (**Figure 3.22**).

Figure 3.22 Primary Mode of Transportation to Reach Health Facility (in percent)



The cost of traveling one-way to the health facility on an average was around 3,614 Riel. HEF cardholders reported incurring a higher cost, around 4,850 Riel in comparison to 2,934 Riel incurred by non-HEF cardholders. Fifteen percent of the patients (34 percent of HEF cardholders as compared to 7

percent of non-HEF cardholders) reported being reimbursed for some of the transport costs, roughly around 14,064 Riel (16,529 Riel for HEF cardholders and 7,817 Riel for non-HEF cardholders).

Patients had to wait for around 5 minutes in the health facility before seeing the health worker (6 minutes for HEF cardholders and 5 minutes for non-HEF cardholders) and spent around 9 minutes with the doctor or nurse during consultation (7 minutes reported by HEF cardholders as compared to 9 minutes reported by non-HEF cardholders).

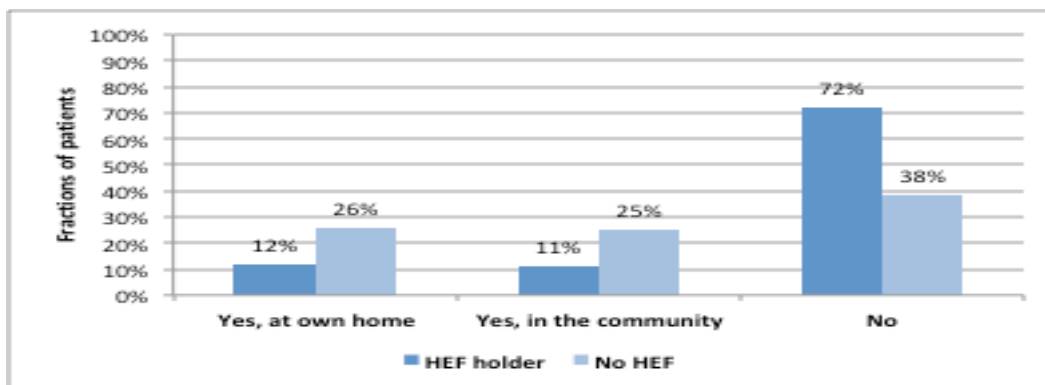
Fifty percent of the patients reported paying a registration, consultation or doctor’s fee, with a considerable difference between HEF cardholders (18 percent) and non-HEF cardholders (57 percent). On average, patients reported paying in total around 1,293 Riel at the facility for this visit, not including transportation costs, with the non-HEF cardholders paying a little more than double the amount, around 1,451 Riel than the HEF cardholders, who paid in total around 614 Riel. A majority of the patients (around 88.3 percent) reported using their savings or regular household budget to pay for health care during this visit followed by money that they borrowed from friends or relatives.

Only 9 percent of the patients interviewed (19 percent of HEF cardholders and 6 percent of non-HEF cardholders) reported being currently covered under a health insurance scheme with 45 percent of them having private health insurance (14 percent of HEF cardholders and 70 percent of non-HEF cardholders), 21 percent being covered under a public health insurance scheme (16 percent of HEF cardholders and 25 percent of non-HEF cardholders), and 34 percent having both (70 percent of HEF cardholders and 4 percent of non-HEF cardholders).

Traditional Birth Attendants

Around 28 percent of HEF cardholders as compared to 20 percent of non-HEF cardholders reported knowing of a traditional birth attendant (TBA) in the community. However, the findings indicate some differences between HEF cardholders and non-HEF cardholders regarding use of TBA services in the last month - 12 percent and 11 percent of HEF cardholders reported using TBA services in the last month at home and in the community, respectively in comparison to 26 percent and 25 percent of non-HEF cardholders (**Figure 3.23**).

Figure 3.23 Patients Seeking TBA Services in the Last Month (in percent)

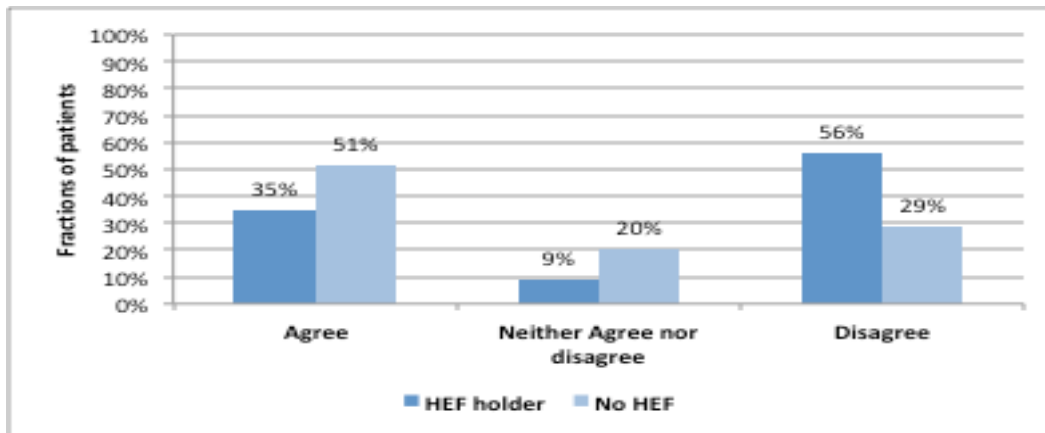


Of the services used in the last month, the findings show that a higher percent of HEF cardholders used the TBA services for “escorting them to the health facility for delivery” (25 percent as compared to 13 percent of non-HEF cardholders) and “health education or promotion” (25 percent as compared to 1 percent of non-HEF cardholders). A higher percent of non-HEF cardholders, however, used the services

of the TBA for “identifying pregnancy” (18 percent as compared to 12 percent of HEF cardholders), and “bringing them for antenatal checkup” (33 percent as compared to 12 percent of HEF cardholders). More than half of the responses were included in “others” (55 percent).

It is interesting to note that with regard to the quality of services being provided by the TBA in the community, there were considerable differences in the opinions of HEF cardholders as against the non-HEF cardholders (**Figure 3.24**).

Figure 3.24 Level of Satisfaction for TBA Services Provided in the Community (in percent)



While 51 percent of the non-HEF cardholders agreed that the TBA provided good quality services in the community (as compared to 35 percent of HEF cardholders), 56 percent of the HEF cardholders disagreed with this (as compared to 29 percent of non-HEF cardholders). For around 17 percent of the patients interviewed (9 percent of HEF cardholders and 20 percent of non-HEF cardholders), it made no difference.

3.4 Community

Key Findings

- The most accessible health center was on an average about 3km away from the villages.
- Private facilities providing basic health services (that is, private pharmacy, drug seller, traditional healer, monk/religious leader and traditional birth attendant) were much nearer to the villages (within a range of 1-2km) than most of the public health facilities (referral hospitals were beyond 8km).
- The average time taken to travel to the nearest facility providing basic health services, either public or private, was less than five minutes by motorbike and car.

Community Profile

A total of 2,474 households in 140 villages across 23 provinces in Cambodia participated in the baseline study. Data from the community survey shows that on average, a village covers about 244 households with an average population of 1,063. The average population of HEF or IDPoor holders was about 46 households per village; this covers about 149 persons in each village on an average. **Table 3.4** presents characteristics of villages selected for the baseline study.

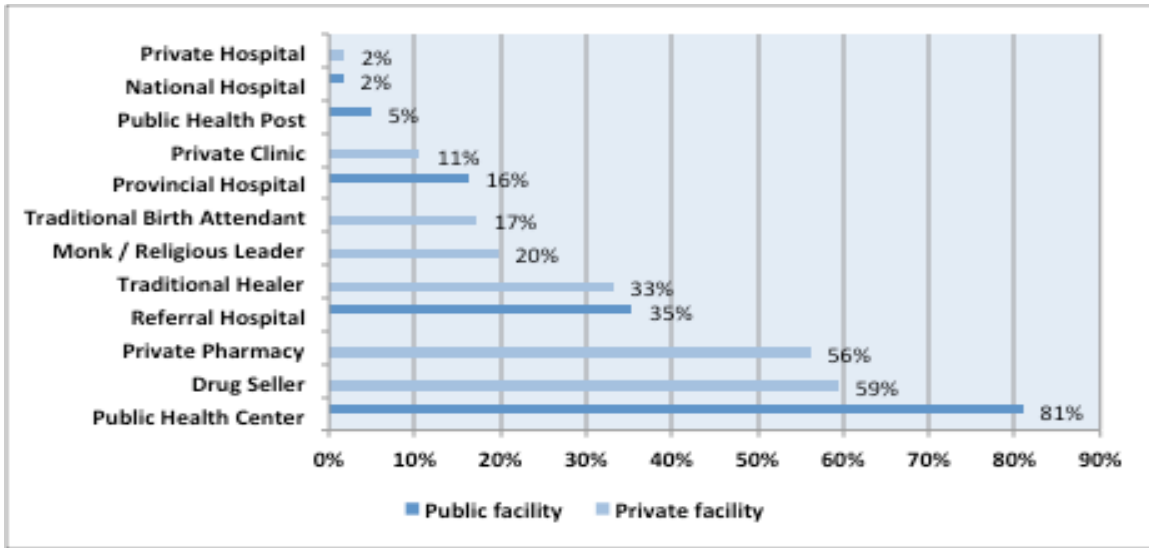
Table 3.4 Characteristics of Villages Selected for the Baseline Study

Characteristics of villages	
Number of villages	140
Number of households in the village (average)	244
Population in the village (average)	1,063
Number of households with HEF/IDPoor (average)	46
Number of households with IDPoor 1	20
Number of households with IDPoor 2	26

Access to Facilities Providing Basic Health Services in the Community

Data from the community survey shows that villages had access to both public and private health facilities. In terms of public health facilities, findings indicate that the health center in or near villages was most accessible to the community (81 percent), followed by referral hospital (35 percent) and provincial hospital (16 percent) (**Figure 3.25**).

Figure 3.25 Accessibility of Facilities Providing Basic Health Services in the Community (in percent)

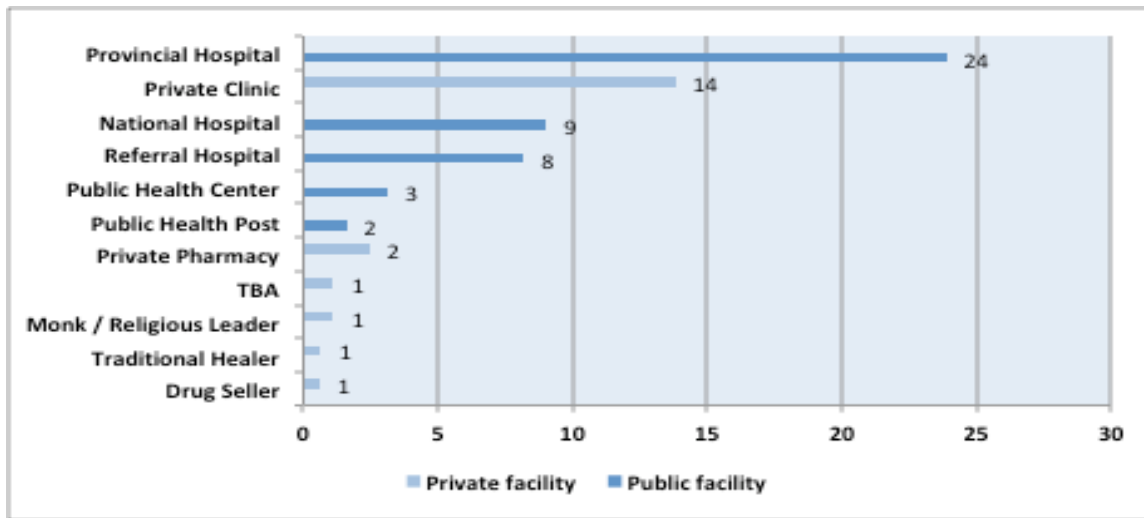


With regard to accessibility of basic health services from private facilities, the data shows that the drug seller and private pharmacy were the most accessible to the community. Besides these facilities, villagers also had access to the non-medical sector such as traditional healer, monk/religious leader and traditional birth attendant in or near the village; this accounted for 33 percent, 20 percent and 17 percent, respectively. Compared to the accessibility of villages to the non-medical sector, the findings from the community survey indicate that only 11 percent of the villages had access to private clinics and 2 percent had access to private hospital in or near the village.

Distance to the Nearest Facility

The average distance of villages from the nearest public facility ranged from 2km for a health post to 24km for a provincial hospital. Health centers which were most accessible by villages were on an average about 3km away from the villages (**Figure 3.26**).

Figure 3.26 Distance to the Nearest Facility Providing Basic Health Services (In km)



Private facilities providing basic health services such as the private pharmacy, drug seller, traditional healer, monk/religious leader and traditional birth attendant were much nearer to the villages (within a range of 1-2km) than most of public health facilities. However, the nearest private clinic from the villages was found to be on an average at a distance of 14km.

Time Taken to Travel to the Nearest Facility

Data from the community survey indicates that the average time taken to travel to the nearest facility providing basic health services, both public and private, was less than 5 minutes by motorbike and car (Figure 3.27 and Figure 3.28).

Figure 3.27 Time Taken to Travel by Motorbike to the Nearest Facility (in minutes)

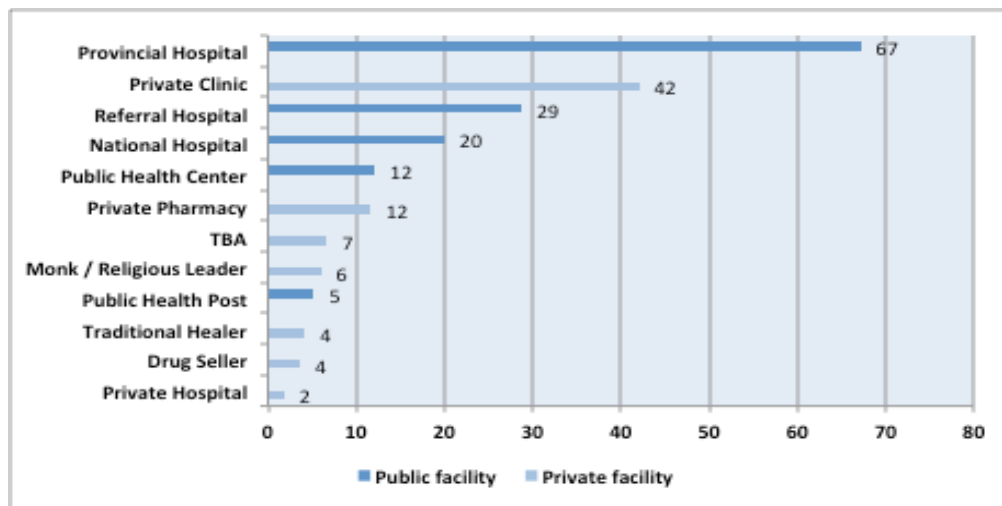
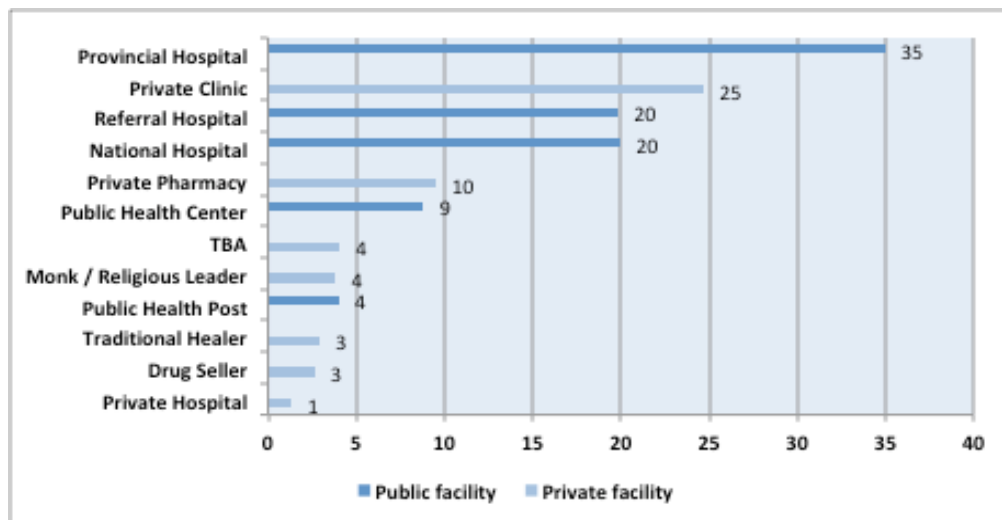


Figure 3.28 Time Taken to Travel by Car to the Nearest Facility (in minutes)



On an average the time taken to travel to the furthest health facilities, that is, the provincial hospital and the private clinic, was around 67 minutes and 42 minutes by motorbike and 35 minutes and 25 minutes by car respectively.

Social Capital and Community Empowerment

It is heartening to note from the study findings that a majority of the villages, around 88 percent, have an active village health support group in the community and if people are dissatisfied with health care services in the community then there is also a community group that they can complain to. In fact, more than half of the villages reported that in the last 12 months there had been complaints made in the community regarding health care services.

3.5 Household

Key Findings

- Seventy-one percent of HEF household heads were aware of HEF entitlements before receiving the Equity Card; 40 percent of non-HEF household heads were aware of the Post-ID system.
- There is generally a good understanding among HEF household heads of their entitlement to health services at public facilities (74 percent to 81 percent). Less than 60 percent of HEF household heads understood their benefits regarding indirect cost exemption.
- More than 80 percent of HEF holders visited OPD from a private health provider; 45 percent HEF holders visited IPD from a private health provider.
- Approximately half of respondents in HEF households (49.4 percent) and non-HEF households (49.8 percent) sought care at a pharmacy or drug seller.
- HEF households (17.2 percent) were slightly more likely to seek care at a health center than non-HEF households (11.7 percent), and less likely at a private clinic or private hospital (HEF 23.0 percent, non-HEF 25.9 percent) and home visits of trained health workers (HEF 4.0 percent, non-HEF 5.4 percent).
- Sixty-two percent of respondents (57 percent HEF households; 67 percent non-HEF households) chose 'Was not Sick Enough' as the reason for not pursuing any medical or non-medical treatment, despite having acknowledged their illness.
- Ninety-four percent of HEF households and 91 percent of non-HEF households reported Out-of-Pocket expenditures on medicine.

Household Characteristics

A total of 2,472 households participated in the survey (**Table 3.5**). This figure comprised 1,094 households with current HEF members (henceforth "HEF household") and 1,324 households without current HEF members (henceforth "non-HEF households"). The remaining 56 households (260 individuals) were dropped from the analysis. The average number of members in each household was five in both HEF households and non-HEF households. The two largest age groups represented in the survey from both HEF households and non-HEF households were 0-18 years and 26-47 years. Overall, the proportion of males (47 percent) and females (53 percent) was consistently distributed in HEF households and non-HEF households. The proportion of literate males and literate females in HEF households was 47 percent and 44 percent, respectively, and in non-HEF households, 54 percent and 51 percent, respectively. In HEF households, 89 percent males and 96 percent females received up to primary school education, which were both approximately 10 percent higher than non-HEF households. However, the proportion of both males and females that received advanced education (secondary school up to undergraduate studies) was two-fold higher in non-HEF households, compared to HEF households.

Table 3.5 Household Characteristics

Characteristics	HEF	Non-HEF	All
Number of households	1,094	1,324	2,474
Number of household members	5,473	6,611	12,344
Male (%)	47	47	47
Female (%)	53	53	53
Age Distribution: Male ; Female (%)			
0-18	55; 43	47; 41	51; 42
19-25	9; 11	10; 16	10; 13

26-49	27; 32	32; 30	30; 31
50-59	4; 6	5; 6	4; 6
60+	5; 8	5; 7	5; 8
Literate Male; Literate Female (%)	47; 44	54; 51	51; 48
Level of Education: Male / Female (%)			
Pre-school or kindergarten	42; 43	40; 40	41; 41
Below primary	35; 39	26; 31	30; 34
Primary	12; 14	14; 16	13; 15
Lower Secondary	4; 3	8; 6	6; 5
High School	1; 1	4; 3	3; 2
Technical School (Nurse, Teacher, etc.)	0; 0	0; 0	0; 0
Undergraduate (Bachelor)	0; 0	2; 1	1; 1
Graduate (Master, Doctorate)	0; 0	0; 0	0; 0
Others	0; 0	0; 0	0; 0
Don't know	4; 1	6; 3	5; 2

Health status

Approximately 35 percent of total household members indicated having suffered from some type of illness (acute), excluding disabilities or chronic illnesses, in the two weeks prior to the survey. On the other hand, 11 percent of total households indicated they were suffering from some disability or chronic illness. Among these populations, 18 percent were found to suffer from disabilities (**Figure 3.29**), 21 percent from chronic illnesses (**Figure 3.30**), and 70 percent from other types of chronic illnesses not previously identified in the survey.

Figure 3.29 Types of Disabilities Suffered by 18 percent of Total Households

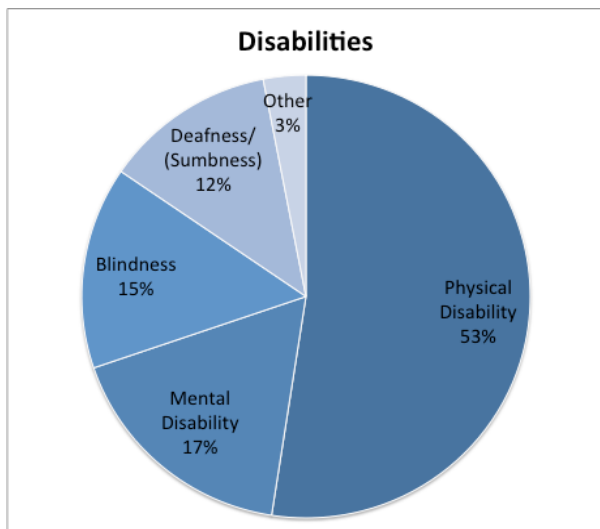
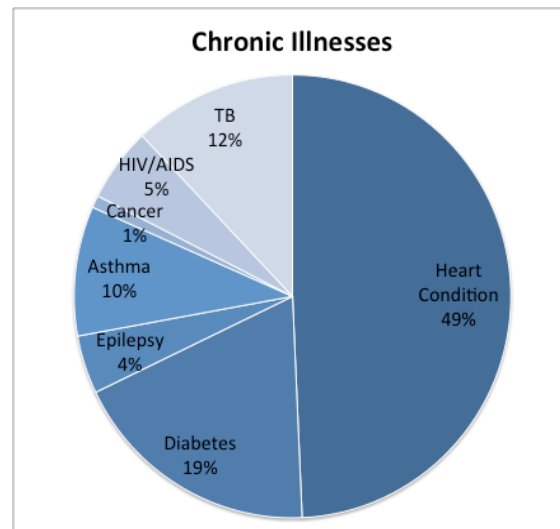


Figure 3.30 Types of Chronic Illnesses Suffered by 21 percent of Total Households



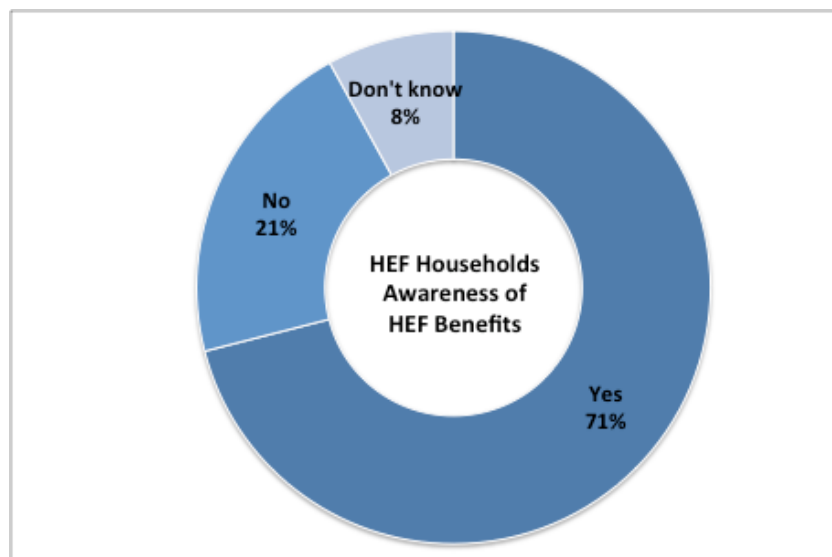
Health protection status

Only 86 percent of HEF household members reported being covered by the HEF/IDPoor program and none reported having the Priority Access Card (PAC). On the other hand, 2 percent of non-HEF households reported being covered under a health insurance or social health protection scheme; approximately half were covered by private health insurance/community-based health insurance or the National Social Security System (NSSS); and the other half indicated other options.

Knowledge of HEF entitlements

The head or the most knowledgeable HEF member of each HEF household (henceforth “HEF household head”) was asked whether they were aware of the HEF entitlements before receiving the Equity Card (commonly referred to as “IDPoor Card”). Seventy-one percent said they were aware, 21 percent said they were not aware, and 8 percent said they did not know (**Figure 3.31**). On the other hand, 40 percent of non-HEF household heads were aware of the Post-ID system. Forty percent of non-HEF household heads said they were currently Post-ID/PAC holders, although the survey sampling designated current PAC holders to be HEF households in the beginning of sampling.

Figure 3.31 HEF Households' Awareness of HEF Entitlements



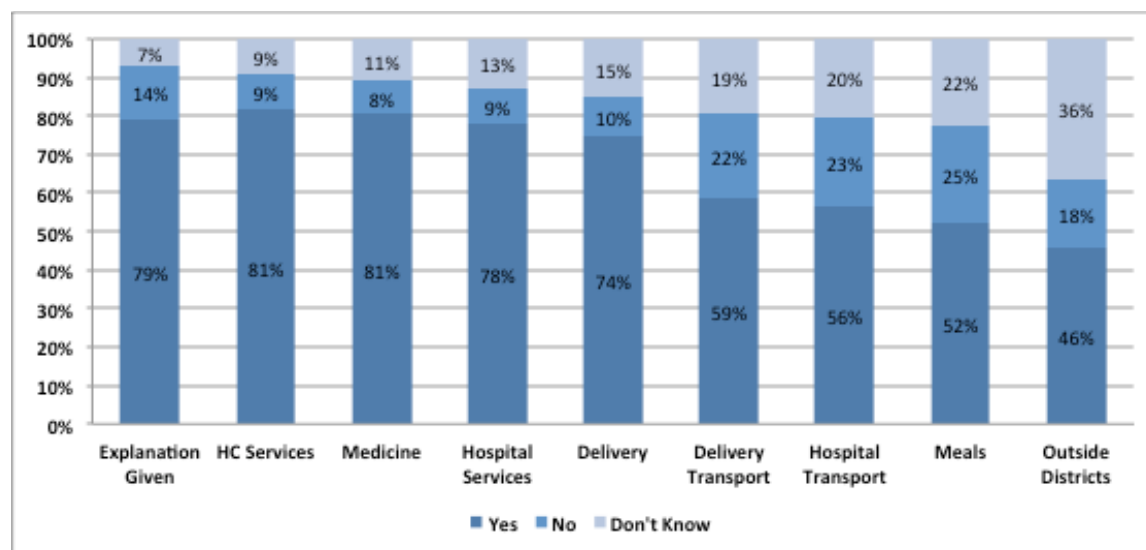
The level of understanding of HEF household heads about the use of the HEF card was assessed (**Figure 3.32**). Approximately 80 percent of respondents indicated that they had been given instructions on their entitlements at the time of receiving the HEF card. In parallel with this response, HEF household heads' level of understanding of HEF benefits remained near or less than 80 percent. For example, the level of awareness on cost exemption at health centers and public hospitals was 81 percent and 78 percent, respectively, although only 74 percent were aware of their entitlement to free delivery services at public facilities. Eighty-one percent indicated awareness of free access to medicines at public health facilities.

There was generally less awareness about the indirect cost of reimbursement, such as that on transportation to public facilities for delivery (59 percent) and transportation to public facilities for hospitalization (56 percent). Approximately 20 percent of respondents indicated that they were not entitled to these reimbursements, while a similar proportion said they did not know. Meal allowances for caregivers at public facilities were only understood by approximately half of HEF household heads

(52 percent). Among those who were not aware, more than half indicated that they were not entitled to meal allowances (25 percent). Moreover, less than half of the respondents (46 percent) acknowledged that the same benefits apply at public facilities outside of their own district, 18 percent indicated that they were not entitled to these benefits, and 36 percent said that they did not know. These awareness levels of indirect costs seem lower than in earlier surveys, and could possibly be due to the fact that indirect costs were temporarily unavailable during the months when this baseline survey was conducted (August to November 2016).

In sum, there is generally a good understanding among HEF household heads of their entitlement to health services at public facilities (74 percent to 81 percent). However, lower than 60 percent of HEF household heads understood their benefits toward indirect cost exemption. This necessitates improved explanations at the time of issuing HEF cards to beneficiaries.

Figure 3.32 Responses of HEF Household Heads on whether they Received Explanation about HEF Benefits, and their Entitlement to Cost Exemptions Associated with Public Health Services (in percent)



Health Utilization

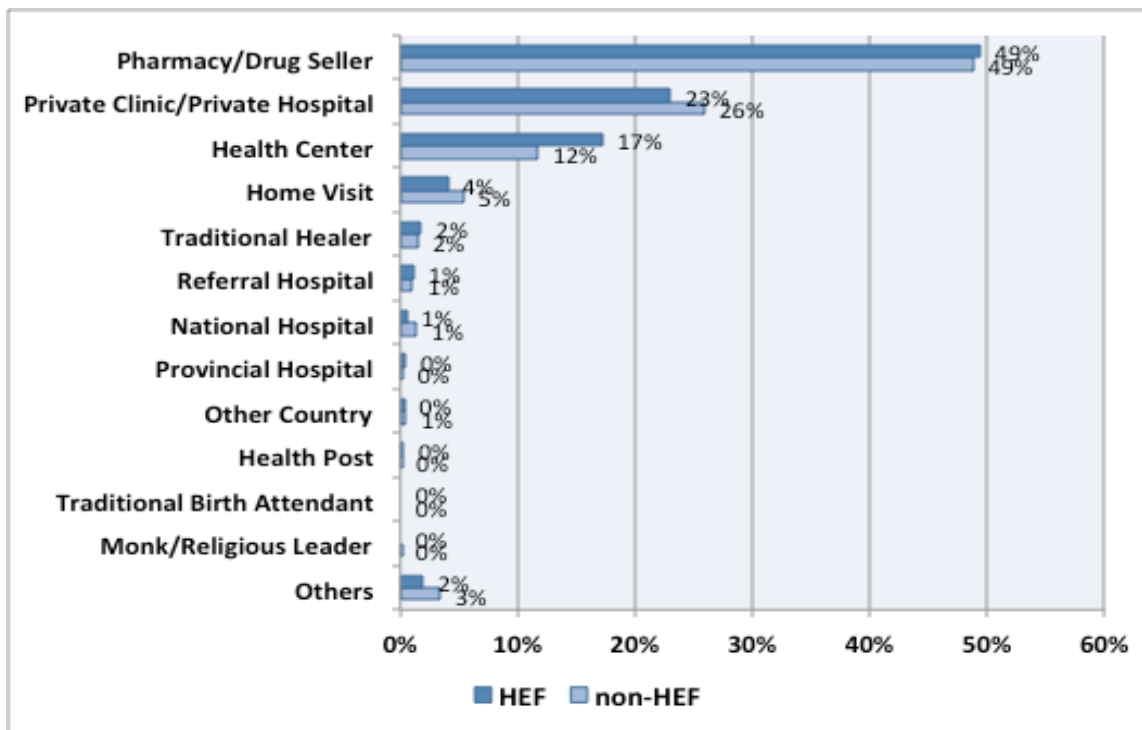
Type of health service utilization

Approximately 35 per cent of total respondents indicated that they had suffered from some form of acute illness or injury in the two weeks prior to the survey. There was no difference in the proportion of ill population between HEF and non-HEF household members. Among these respondents, 77 percent indicated that they had been to a health facility or provider for treatment of the illness.

At the most recent visit, approximately half of the respondents in HEF households and non-HEF households sought care at a pharmacy or drug seller (**Figure 3.33**). **It is worth noting that HEF households were slightly more likely to seek care at a health center than non-HEF households, and less likely at a private clinic or private hospital and from home visits of trained health workers.** One quarter of those in non-HEF households visited a private clinic or hospital, a proportion that is 2 percent to 3 percent higher than those in HEF households. In contrast, more individuals from HEF households visited a health center (17.2 percent), compared to non-HEF households (11.7 percent). Only an average of 1 percent of the respondents visited either a district referral hospital or national hospital, and less than 0.5 percent visited a provincial hospital for their most recent treatment. Overall, less than 20

percent sought care at public health facilities. The only non-medical care the respondents indicated to have received was from traditional healers, and no other non-medical services were utilized, such as monks/religious leaders or traditional birth attendants. No respondents indicated having sought care outside the country. No significant differences were observed between HEF and non-HEF households.

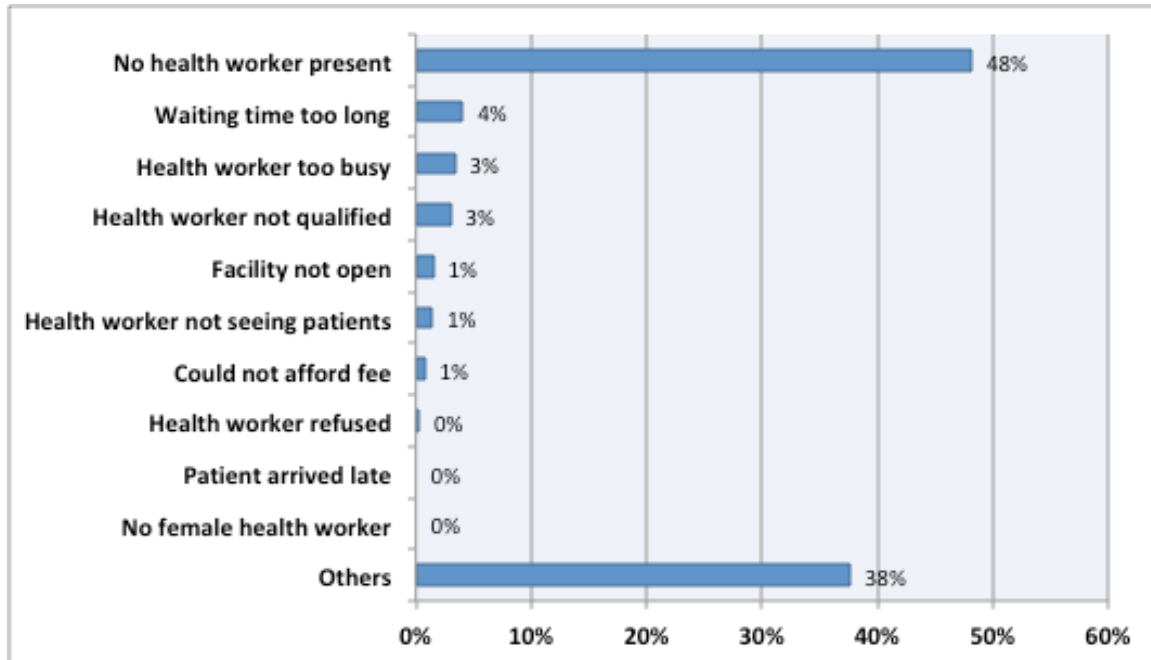
Figure 3.33 Most Recent Health Visit in the Two Weeks Prior to Survey (in percent)



Interaction with health workers

Among those who suffered from an acute illness or injury in the two weeks prior to the survey (35 percent of the total sample), 74 percent indicated that they did not have any direct interaction with a health worker at the most recent visit. Approximately half of these respondents said that there was no health worker present at this visit (**Figure 3.34**). Approximately 14 percent of respondents chose other supply-side factors, such as “waiting time too long”, “health worker too busy”, “health worker not qualified”, “facility not open”, “health worker not seeing patients”, “health worker refused”. Another 14 percent or 38 percent of “Other” indicated that relatives or a family member bought the tablets on behalf of the patient, which is why they did not need to have any direct interaction.

Figure 3.34 Reasons for Not Having any Direct Interaction with a Health Worker at the Most Recent Visit (in percent)



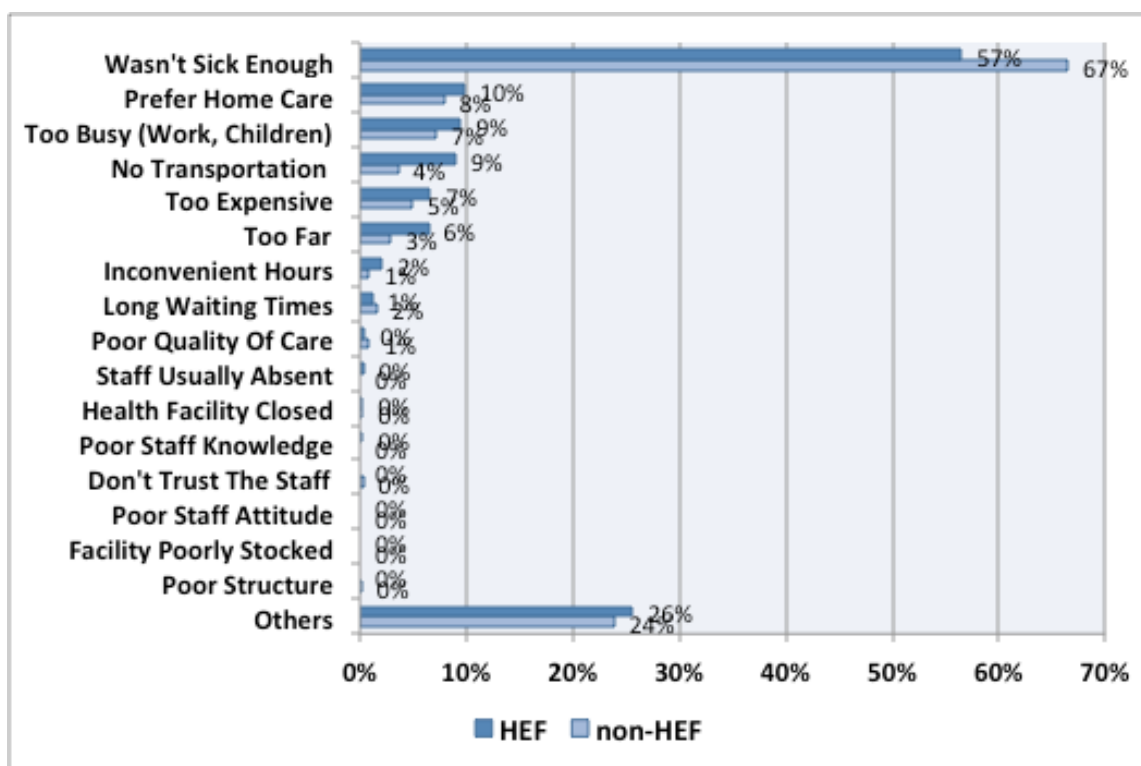
Reason for not seeking health services

Among those respondents who suffered from an acute illness or injury in the two weeks prior to the survey (35 percent of total sample) when asked whether they sought medical or non-medical care for the illness, 77 percent from both HEF households and non-HEF households indicated that they visited a health facility, and 23 percent indicated they had not. **This could imply that delaying medical care due to perceived mildness of illness was common, but less so in HEF households.**

More than half (62 percent) of respondents (57 percent HEF households and 67 percent non-HEF households) chose ‘Was not Sick Enough’ as a reason for not pursuing any medical or non-medical treatment, despite having acknowledged their illness (Figure 3.35). This could imply that their delayed care-seeking behavior was more pronounced among those in non-HEF households.

Less than 10 percent of respondents chose each of the following reasons: ‘Prefer Home Care’, ‘Too Busy’, ‘Too Expensive’, ‘No Transportation’, ‘Too Far’. More respondents from HEF households selected these answers compared to those from non-HEF households (approximately 2 percent difference) except for ‘No Transportation’, which was selected by 9 percent of respondents in HEF households and 4 percent of non-HEF households. The barrier due to distance (‘Too Far’ and ‘No Transportation’) seems to have affected 15 percent of respondents from HEF households from seeking care, which is 2-fold higher than the proportion of ill non-HEF households not seeking care due to distance. This finding is consistent with the current body of evidence highlighting the positive impact of indirect cost exemptions on care-seeking behavior of HEF beneficiaries. Lastly, only 1 percent to 2 percent of respondents chose each of the reasons such as ‘Poor Quality of Care’, ‘Inconvenient Hours’, or ‘Long Waiting Times’.

Figure 3.35 Reasons for Not Seeking Care by HEF and Non-HEF Households (in percent)



Location of medical facility

Among those who suffered from an acute illness or injury in the two weeks prior to the survey (35 percent of total sample), 49 percent had the most recent visit at a pharmacy or drug seller, and 41 percent at one type of medical facility⁶ - the latter was then asked about the location of the visit. The majority of respondents from HEF households (70 percent) had gone to a medical facility in their commune, 14 percent in the district, 9 percent in the province and 6 percent in another province. Approximately half the respondents from non-HEF households sought medical care located in the commune (55 percent) and the rest across the district (23 percent), province (11 percent), and in another province (11 percent) (Table 3.6). This shows that respondents from HEF households were less likely to travel beyond their own commune to seek medical care, compared to non-HEF households.

Table 3.6 Location of Public Facility of Most Recent Visit (in percent)

	Commune	District	Province	Other Province
HEF	70	14	9	6
Non-HEF	55	23	11	11
Total	62	19	10	9

Regarding a medical and non-medical visit in the two weeks prior to the survey, the average travel time and wait time at the facility for respondents from HEF households were 22.3 minutes and 8 minutes,

⁶ Both public and private facilities: national hospital, provincial hospital, referral hospital, health center, health post, private clinic and private hospitals

respectively which was shown to be slightly lower than those from non-HEF households (24 minutes and 9.5 minutes) (Table 3.7).

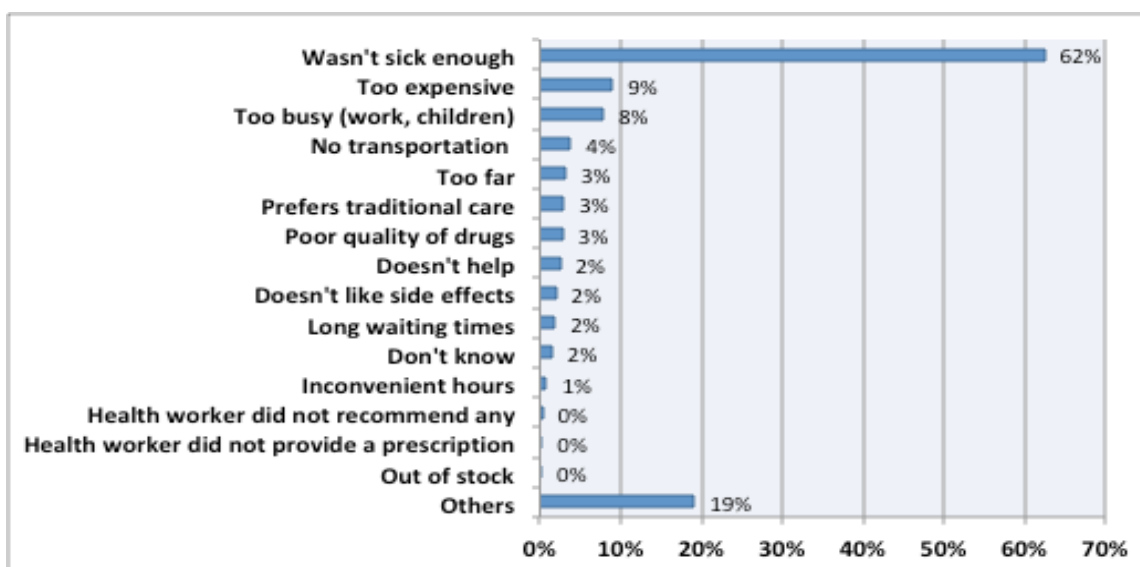
Table 3.7 Time Spent on Travelling and Waiting for Last Visit (in minutes)

	Travel Time	Wait Time
HEF	22.3	8.0
Non-HEF	24.0	9.5
Total	23.1	8.8

Medicines

Among those who suffered from an acute illness or injury in the two weeks prior to the survey (35 percent of total sample), 81 percent indicated that they took medication to address this illness, 15 percent did not take any, and 4 percent said they did not know. Among those who did not take any medication, the primary reason (63 percent) was shown to be that respondents felt “not sick enough” (Figure 3.36). Less than 1 percent chose “lack of prescription or medical recommendation” as the reason behind not taking medications, which reflects the current pharmaceutical situation in Cambodia in which the public can access drugs at pharmacies and drug stores without a prescription. Inadequate finance for medication (18 percent found medicines “too expensive”) was the commonest constraint. The results from the health facility survey and ongoing data from the SDG assessments may further add insights about the stock availability and distribution to health facilities, and improvements in availability after the introduction of SDGs.

Figure 3.36 Reasons for Not Taking Medications (in percent)



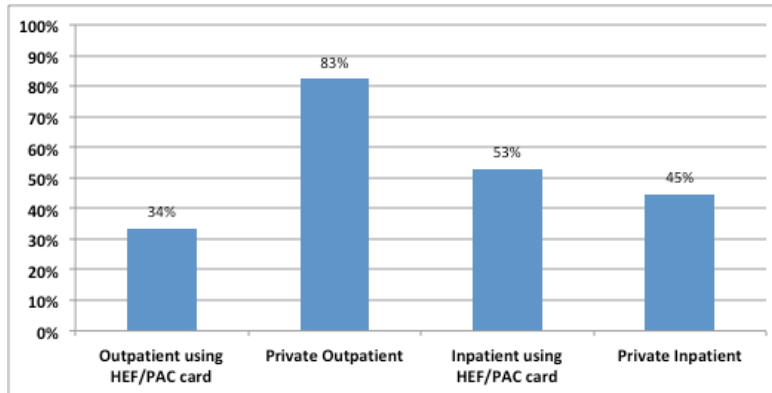
Inpatient Department (IPD) and Outpatient Department (OPD)

Among the individuals from HEF Households, 77.5 percent indicated that they were sick or injured in the last 12 months; the average number of times for getting sick or injured was 5.9 times. Approximately 34 percent of these respondents visited OPD using IDPoor card/PAC for free care; about a quarter of whom visited one to three times (Figure 3.37). More than 80 percent visited OPD from a private health provider, about one half of whom visited one to three times. The higher proportion of private OPD visits

are noteworthy, given that the respondents can benefit from free care covered by their IDPoor/PAC entitlement.

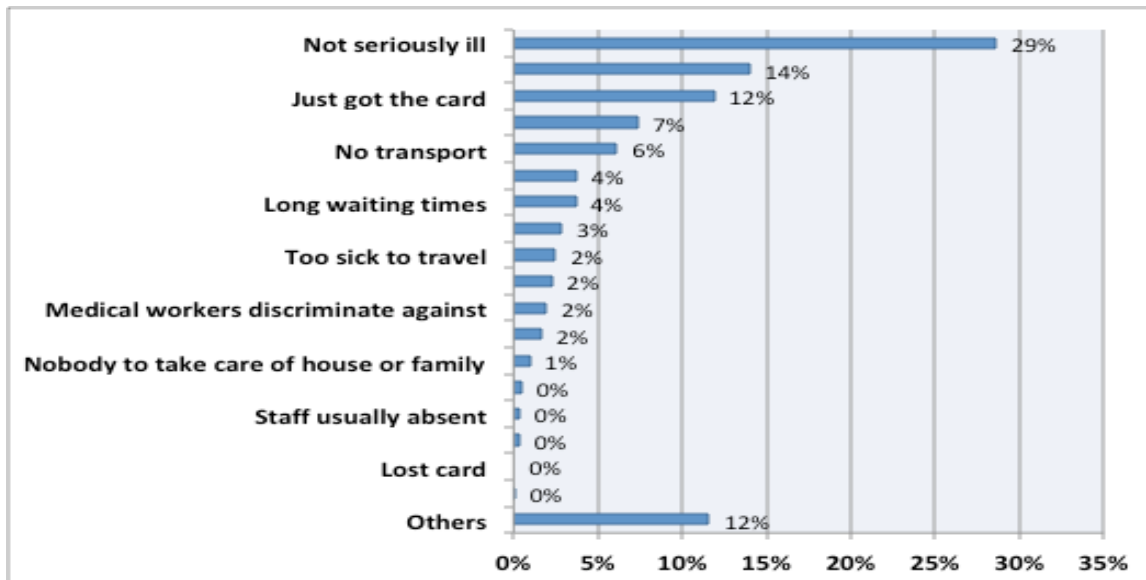
On the other hand, 53 percent visited IPD using IDPoor card/PAC for free care, 40 percent of whom visited only once during the 12-month window. Similarly, 45 percent visited IPD from a private health provider, 32 percent of whom visited only once during the 12-month window. Again, the similar proportion of visits to either a public provider using IDPoor card/PAC or private provider is noteworthy.

Figure 3.37 Respondents Seeking Outpatient or Inpatient Treatment When Ill (in percent)



The same respondents (HEF households; ill or injured in the past 12 months) were asked to provide reasons for not “using a card” (Figure 3.38). Approximately 29 percent noted that they were “not seriously ill”, while a similar proportion (26 percent) indicated supply-side factors, such as “poor quality of medicine”, “no transport”, “long waiting times”, “facility too far”, “no medicine available”, “medical workers discriminate against members”, and “medical worker takes money”. Approximately 14 percent indicated that they preferred a private doctor or home visits.

Figure 3.38 Reasons for Not Using HEF/PAC Card (in percent)



Health-Related Expenditures

Out-of-Pocket (OOP) expenditure

Among those who fell ill and sought care in the two weeks prior to the survey (35 percent of total sample), 69 percent from HEF households and 78 percent from non-HEF households indicated that they had health-related expenditures, including both direct (for example, official provider fees, laboratory, x-ray, medicines) and indirect costs (for example, transportation), indicating that those from HEF households were less likely to experience out-of-pocket (OOP) health expenditures while seeking health care.

There were slight differences between those from HEF households and non-HEF households on the types of OOP expenditures (**Table 3.8**). For example, 8 percent of respondents from non-HEF households had OOP expenditures on user fees compared to 4 percent among those from HEF households. Also, more respondents from non-HEF households had OOP expenditures on indirect costs, such as transportation (19 percent) and unofficial payment (2 percent), than HEF households (11 percent and 1 percent, respectively). **These findings indicate a decrease in the proportion of respondents from HEF households that paid for user fees and indirect costs, compared to those from non-HEF households.** Moreover, 94 percent of HEF households and 91 percent of non-HEF households expressed OOP expenditures on medicine. Thus, the majority of households experienced some costs for medicines. These OOP amounts included costs incurred from either public or private services.

Table 3.8 OOP Health Expenditure In the Past Two Weeks (in percent)

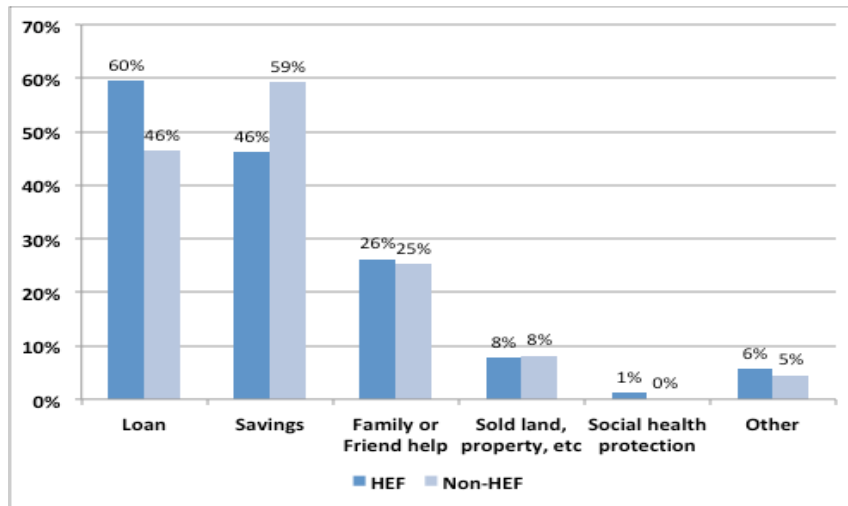
	User Fees	Laboratory or X-Ray	Medicines	Transport	Unofficial Payment	Others
HEF	4	4	94	11	1	2
Non-HEF	8	5	91	19	2	2
Total	6	4	92	15	2	2

Financial shocks

Thirty-four percent of total households (37 percent HEF households and 32 percent non-HEF households) had at least one member whose treatment cost exceeded the household's usual monthly income. The average largest amount spent on a single health episode was approximately 1.85 million Riels (\approx US\$450) for a respondent from an HEF household and 1.97 million Riels (\approx US\$481) from a non-HEF household⁷. Approximately 60 percent of respondents from HEF households and 46 percent of those from non-HEF households relied on a loan to cover these episodes; in contrast, 46 percent from HEF households and 60 percent from non-HEF households used savings (**Figure 3.39**). Notably, less than 2 percent from HEF and none from non-HEF households indicated that a social health protection scheme (HEF, health insurance, etc.) was used to pay for this expenditure. Therefore, despite the overall health care utilization pattern in which approximately 15 percent to 20 percent of total sample sought treatment at public health facilities, the trend shown here is different among those who experienced a significant financial shock – loans and savings accounted for the primary source of funding. About a quarter from either HEF or non-HEF households received help from family or a friend, and 8 percent from both groups used income from selling their land, property or assets (8 percent).

⁷ 1 USD= 4,100 KHR

Figure 3.39 Source of Payment for Households When Treatment Cost Exceeded Usual Monthly Income (in percent)



3.6 Maternal and Child Health Survey

Key Findings

Among women who had at least one live birth, stillbirth, miscarriage or abortion in the 24 months prior to the survey:

- Eighty-nine percent delivered at a medical facility⁸, as opposed to a non-medical facility⁹.
- Eighty-seven percent received ANC, 97 percent of whom went to a medical facility; 74 percent received PNC, 86 percent of whom at a medical facility.
- Approximately 74 percent (77 percent HEF; 71 percent non-HEF) indicated that they were on birth control if sexually active.
- While all HEF children and almost all non-HEF children were measured for weight, 13 percent from HEF children and 9 percent non-HEF children were measured for height, and 3 percent HEF children and 2 percent non-HEF children were measured for upper arm circumference.
- Among households with children under 5 with below average nutritional status, approximately one half in HEF households received treatment for malnutrition, in comparison to approximately one-fifth in non-HEF households.

Thirty-eight percent of households with children under 5 years of age and 43 percent of households with women in reproductive age were covered by HEF, indicating the importance of HEF in MCH services in the country.

Antenatal Care (ANC) and Postnatal Care (PNC)

Women who had at least one live birth, stillbirth, miscarriage or abortion in the 24 months prior to the survey were asked the following questions regarding their antenatal care, delivery and postnatal care experiences.

Approximately 87 percent (HEF 83 percent; non-HEF 88 percent) indicated that they received antenatal care (ANC). The majority (91 percent) received ANC from a nurse/midwife, and the most common facility visited was the health center (87 percent) (**Figure 3.40**). Overall, 97 percent went to a medical facility – 68 percent within the commune, 15 percent in the district, 9 percent in the province, and 9 percent in another province (**Table 3.9**). Among these, for 13 percent who did not receive ANC, the top three reasons were: “Did not need” (23 percent), “Too busy” (19 percent), and “Was too early in pregnancy” (17 percent). Therefore, the majority of reasons were based on patient discretion. Areas pertaining to health facility and provider (for example, staff knowledge, attitude, quality of care, refusal of care, facility structure, unavailable service, facility hours, waiting time, stock condition) were not selected by any of the respondents. Nevertheless, reasons such as “Too expensive”, “No transportation”, and/or “Too far” were each selected by 5 percent to 10 percent of respondents.

⁸ National hospital, provincial hospital, referral hospital, health center, health post, private clinic and private hospitals

⁹ Pharmacy/drug seller, provider’s home, own home, other home, outdoor location, outside the country

Figure 3.40 Place of Antenatal Care (ANC) Consultation (in percent)

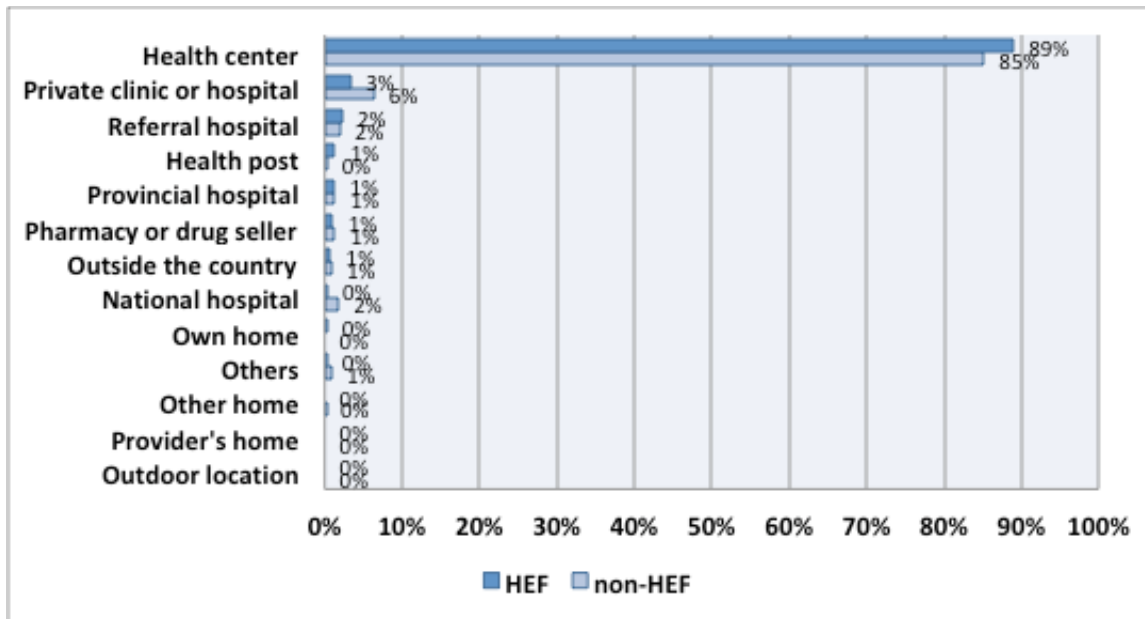


Table 3.9 Location, Antenatal Care (ANC), Delivery and Postnatal Care (PNC) (in percent)

	ANC			Delivery			PNC		
	HEF	Non-HEF	Total	HEF	Non-HEF	Total	HEF	Non-HEF	Total
Commune	72	65	68	52	44	47	53	44	47
District	12	17	15	19	19	19	19	19	19
Province	7	9	9	19	24	22	18	24	22
Other Province	8	9	9	11	13	13	10	14	13

The majority (87 percent) of total respondents were assisted by a nurse/midwife during the delivery, 7 percent by a medical doctor and 5 percent by a traditional birth attendant. The most common place for delivery was the health center (Figure 3.41). The majority (89 percent) visited a medical facility – 47 percent within the commune, 19 percent in the district, 22 percent in the province, and 13 percent in another province.

Among total respondents, 73.8 percent indicated that a health provider checked on their health after the delivery, or received PNC. The majority (90 percent) were attended to by a nurse/midwife, 5 percent by a medical doctor, and 1 percent by a traditional birth attendant. The majority (86 percent) visited a medical facility – 47 percent within the commune, 19 percent in the district, 22 percent in the province, and 13 percent in another province. Therefore, the overall proportion of respondents had a facility visit pattern where delivery and postnatal care (PNC) were similar, although not everyone received the latter (Figure 3.42). More non-HEF women are shown to have visited a private clinic or hospital, compared to HEF households, for both delivery and PNC.

Figure 3.41 Place of Delivery (in percent)

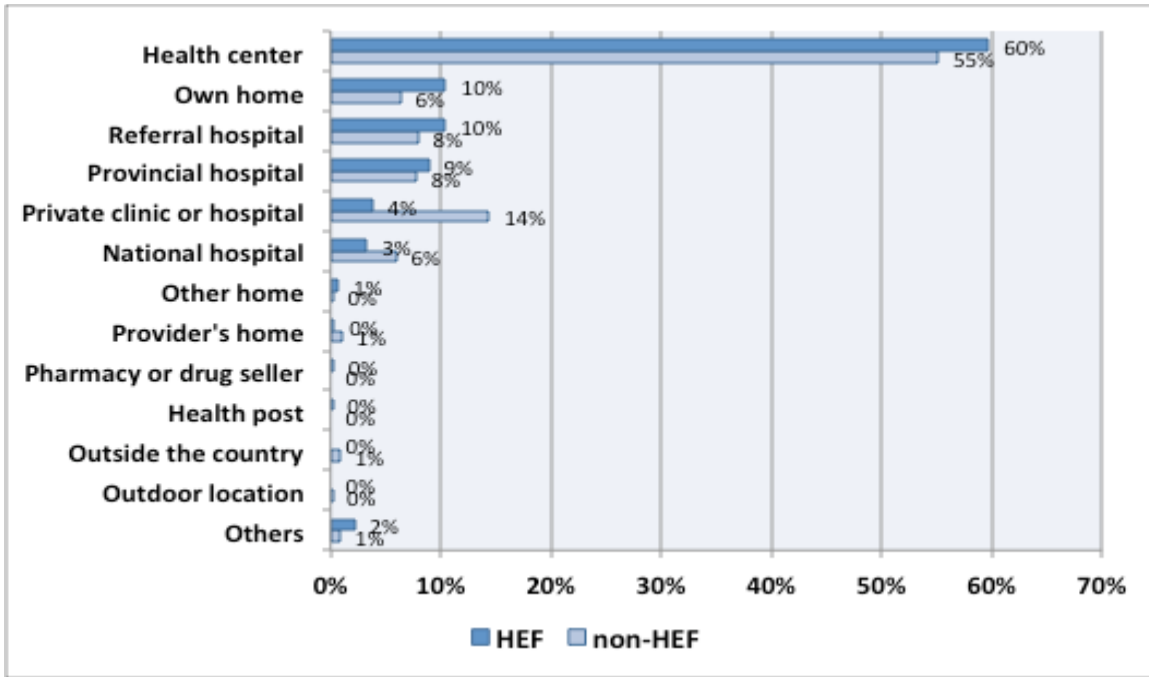
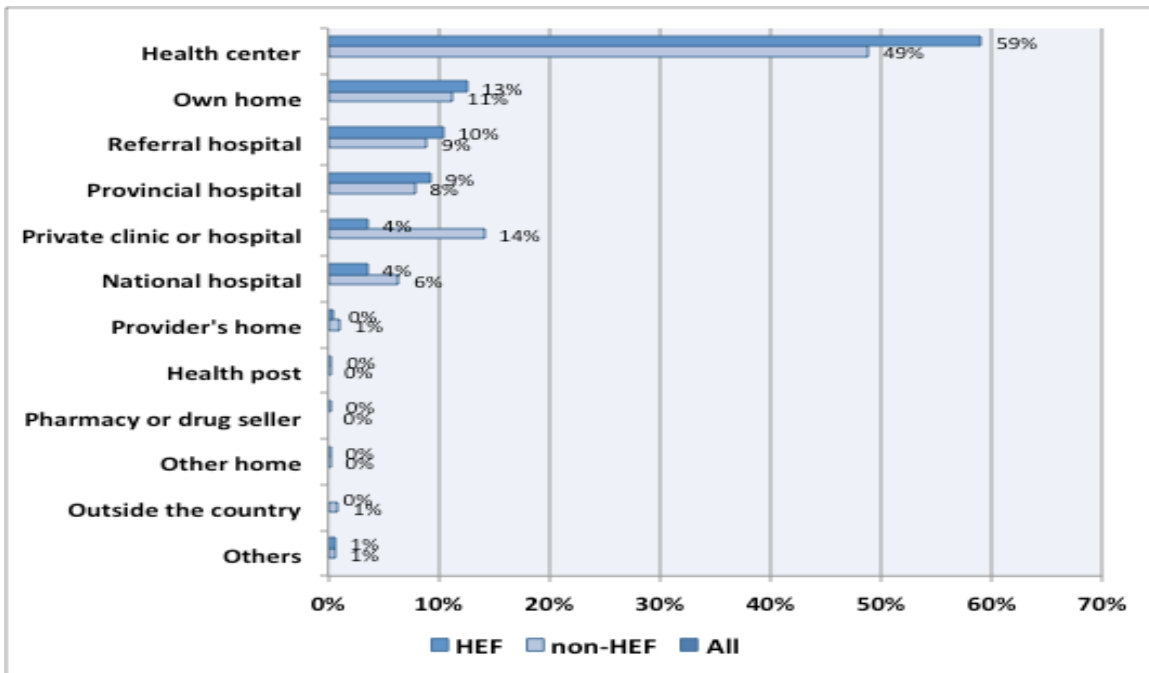


Figure 3.42 Place of Postnatal Care (PNC) Consultation (in percent)

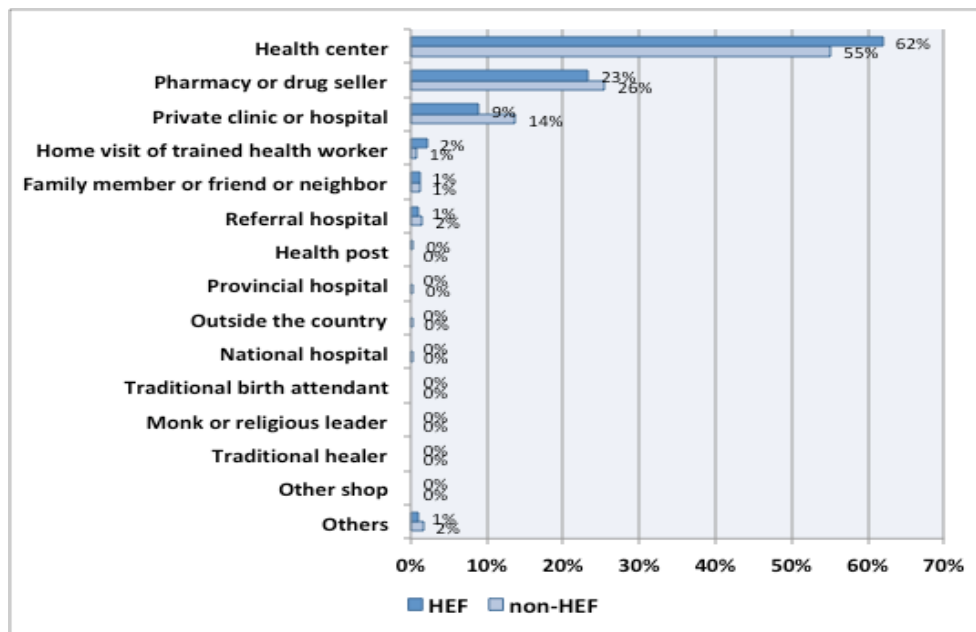


Reproductive Health

There were a total of 2,728 females in the reproductive age group (15-49 years) who responded to the Reproductive Health survey, comprising approximately 22 percent of the total number of people represented in the overall Household survey.

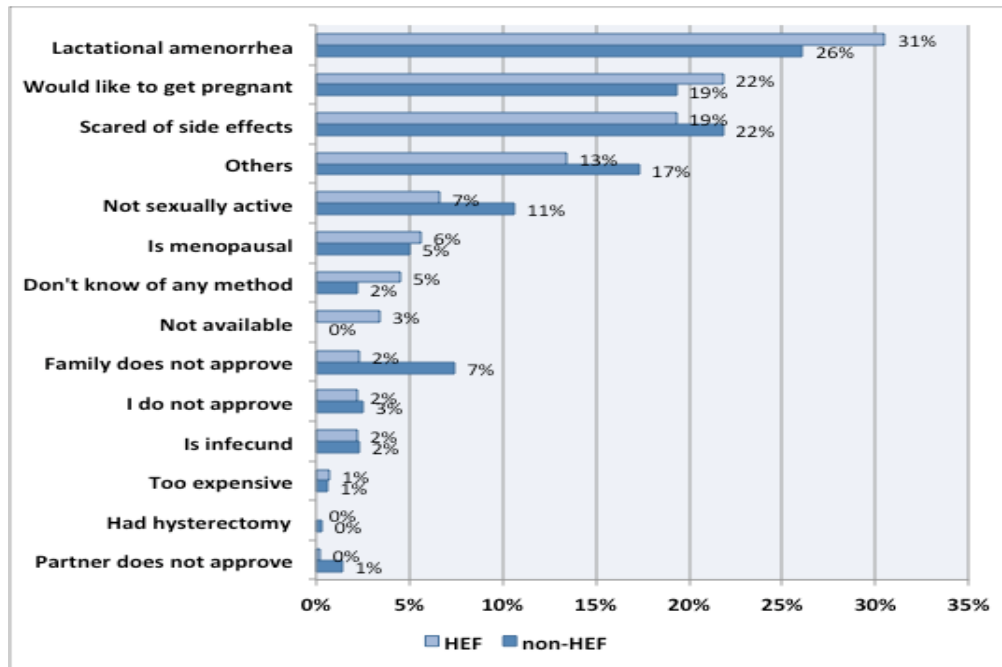
Six percent of them (5 percent HEF; 7 percent non-HEF) self-identified themselves as pregnant mothers, and 94 percent (95 percent HEF; 93 percent non-HEF) indicated not being pregnant at the time of survey. Approximately 74 percent (77 percent HEF; 71 percent non-HEF) indicated that they were on birth control if sexually active. Among them, one half of respondents used the ‘Pill’ (29 percent) or ‘Injectable’ (19 percent); ‘Lud’ (6 percent) and ‘Implants’ (5 percent) were the next common options. Approximately 40 percent indicated that they used a physiological contraceptive method: ‘Withdrawal’ (26 percent), ‘Rhythm/natural method’ (8 percent), or ‘Lactational amenorrhea method’ (3 percent). Slightly more than half of respondents (62 percent HEF; 55 percent non-HEF) obtained the first contraceptive method from a health center; approximately one quarter from a pharmacy or drug seller (Figure 3.43). The trend was similar when asked about where they obtained the current method at their last refill. On average, HEF women paid 9,097 Riels (≈US\$2.20) at the last refill, whereas non-HEF women paid 18,929 Riels (≈US\$4.60).

Figure 3.43 Source of the First Contraceptive Method (in percent)



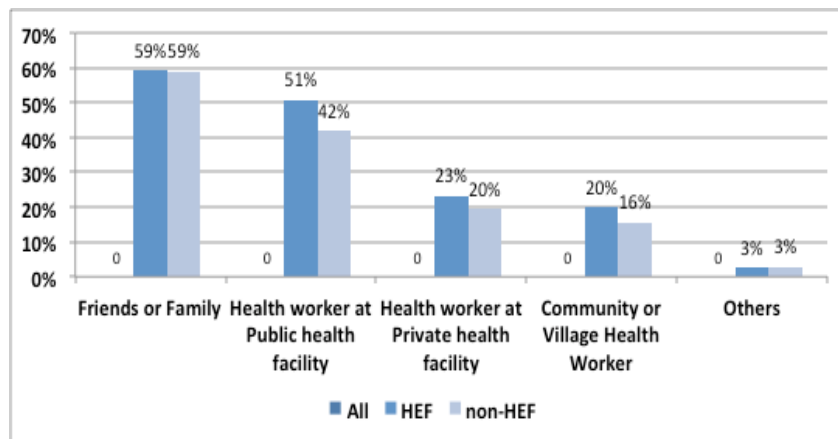
Among those that were not on birth control, the top three reasons for both HEF and non-HEF households were: ‘Lactational amenorrhea’ (31 percent HEF; 26 percent non-HEF), ‘Would like to get pregnant’ (22 percent HEF; 19 percent non-HEF), and ‘Afraid of side-effects’ (19 percent HEF, 22 percent non-HEF) (Figure 3.44). It is interesting to note that aside from the physiological reasons (‘Lactational amenorrhea’ or ‘Would like to get pregnant’), the primary reason for actively not choosing to be on birth control was the fear of side effects. Approximately 2 percent of both HEF and non-HEF females indicated that they did not approve of the use of contraceptives. Less than 3 percent of both HEF and non-HEF households indicated supply-side barriers, such as ‘Not available’ (HEF 3 percent; non-HEF 0 percent) or ‘Too Expensive’ (HEF 1 percent; non-HEF 1 percent).

Figure 3.44 Reasons for Not Being on Birth Control if Sexually Active (in percent)



Approximately 60 percent of both HEF and non-HEF women indicated that their family or friends had talked to them about family planning (Figure 3.45). More HEF women indicated that they consulted health workers at a public facility (50.8 percent; non-HEF 41.8 percent) and private facility (23.2 percent; non-HEF 19.5 percent) for family planning. Approximately 20 percent HEF women and 16 percent non-HEF women indicated having consulted a community health worker or village health support worker.

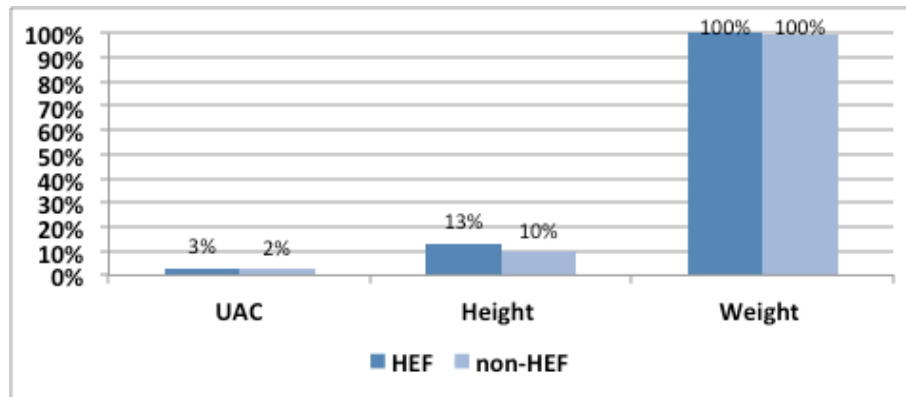
Figure 3.45 Source of Family Planning Consultation (in percent)



Children Under 5 Years of Age

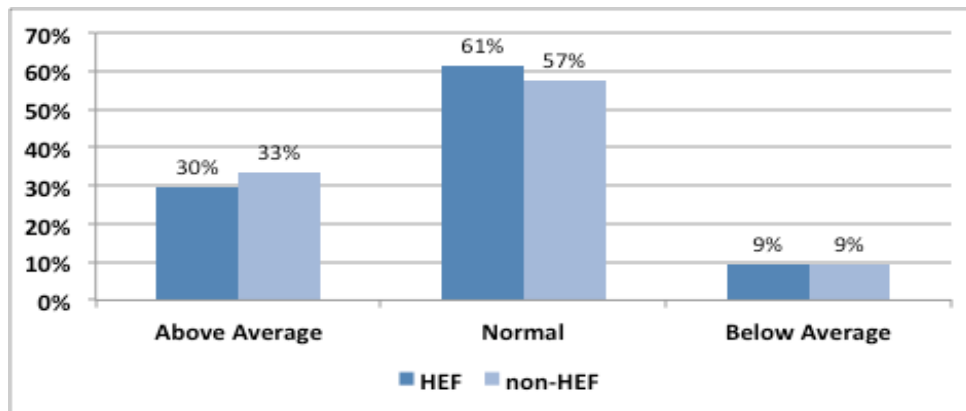
The study revealed that 28 percent of children under 5 years of age from HEF households and 33 percent from non-HEF households received nutritional status measurement in the six months prior to survey. While all HEF children and almost all non-HEF children were measured for weight, 13 percent from HEF children and 9 percent non-HEF children were measured for height, and 3 percent HEF children and 2 percent non-HEF children were measured for upper arm circumference (Figure 3.46).

Figure 3.46 Proportion of Children (under 5 years) Measured for Upper Arm Circumference, Height and Weight (in percent)



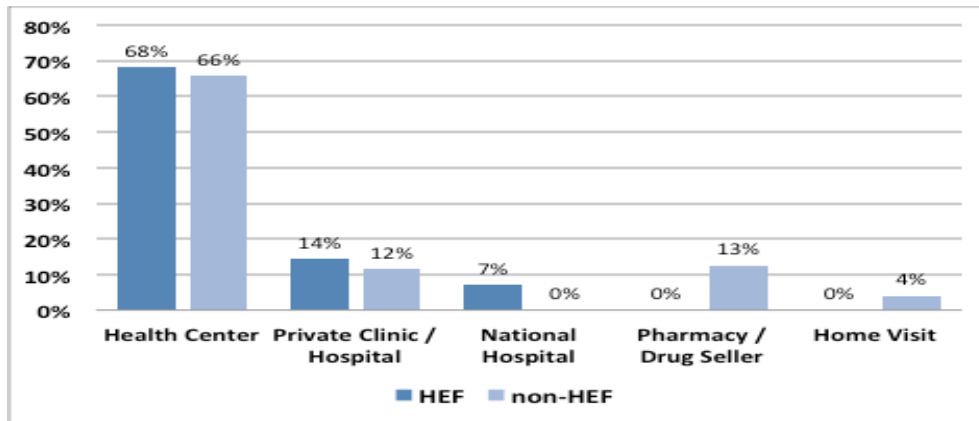
Among those who were measured to determine nutritional status in the six months prior to survey, 29.6 percent and 61.2 percent HEF children were in the normal and above average status, respectively, with a slight difference from the 33.2 percent and 57.4 percent non-HEF children of the same status) (Figure 3.47). The percentage of HEF and non-HEF children under 5 years of age with below average nutritional status was shown to be very similar. Further investigation may be needed to determine factors that have led to these findings.

Figure 3.47 Nutritional Status of Children (under 5 years) (in percent)



Households with children under 5 years of age with below average nutritional status were asked whether they obtained any specialized care for malnutrition after the last measurement. **Approximately one half of those in HEF households received treatment for malnutrition, in comparison to approximately one-fifth of those in non-HEF households.** More than 65 percent from both HEF and non-HEF households indicated having received treatment at the health center, whereas the national hospital was exclusively visited by HEF households (7.1 percent) (Figure 3.48). Between 10 percent and 15 percent of households visited a private clinic or private hospital, regardless of their HEF status. Only non-HEF households sought malnutrition treatment at a pharmacy or drug seller (12.6 percent) and home visit of a trained health worker (4.1 percent).

Figure 3.48 Place of Treatment for Malnutrition (in percent)



Limitations

An important assumption for this survey sampling and analysis was that every member of a household is entitled to the HEF program (IDPoor and PAC), if one member of the household was identified as an IDPoor Card or PAC holder. Experiences on the ground reveal that this does not always hold true; it is possible for one or more members of a HEF household to not be granted entitlement for HEF benefits. Therefore, this fact needs to be taken into consideration when interpreting the results stratified by HEF status.

3.7 Operational Districts

Key Findings

- The average funding across ODs for the fiscal year 2015 was 1.98 billion Riels (about US\$0.5 million).
- The national budget contributed the most to total funds at 54 percent of total funds across all ODs, followed by user fees (15 percent). Service delivery grants (only fixed grants as of 2016) and HEF reimbursements contributed 10 percent and 9 percent respectively.
- Sixty-nine out of 70 of the ODs reported receiving funding from the national budget. Eighty percent ODs reported receiving funding from user fees, 66 percent from HEF reimbursements and 54 percent from midwife incentives.
- Thirty-six percent of ODs reported having complete freedom over choosing how to spend all their funds and 10 percent reported having no freedom at all.
- Expenditure on drugs accounted for the highest spending category at 26 percent of all budget expenditures.
- Forty-seven percent of the ODs conduct monthly M&E of health centers; 34 percent conduct quarterly M&E of health centers
- Sixty-three percent assessed the training needs, 63 percent organized in-service training, and 63 percent helped with career planning for staff at health centers.
- Sixty-four percent ODs set and awarded financial and non-financial incentives for OD staff.
- Ninety-three percent of the ODs prepared an annual budget for the 2015 fiscal year; 87 percent of the ODs monitored OD expenditures against the agreed budget.
- Fifty-nine percent of OD directors thought that the OD staff is highly motivated; 32 percent thought the staff is motivated.

On average, ODs oversee one former district hospital, 13 health centers and 2 health posts. The median OD has 11 health centers but this number varies. ODs at the 25th percentile had 9 health centers; those at the 50th percentile had 11 health centers; those at the 75th percentile had 15 health centers; and the largest OD in the sample had 34 health centers.

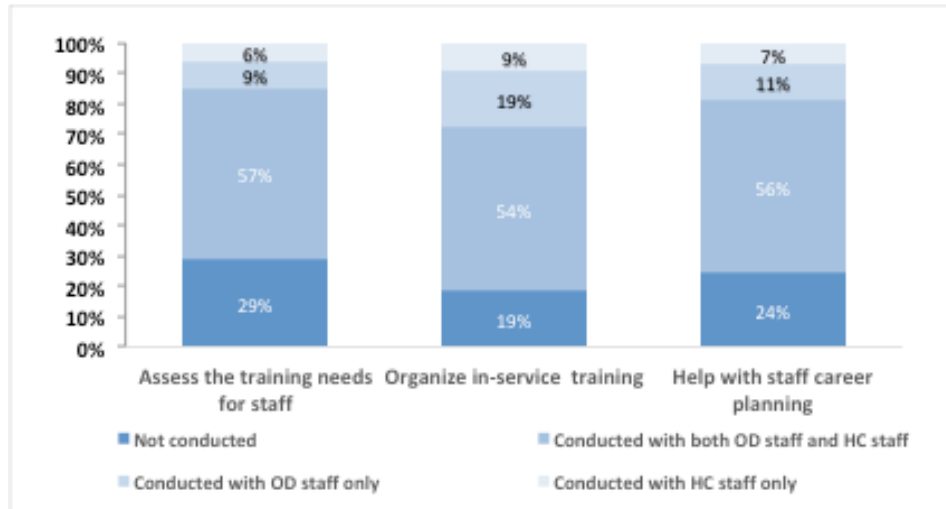
The 70 interviews across the ODs comprised of 57 interviews with OD Directors, 10 interviews with OD Deputy Directors, 1 interview with Administrative Staff, and 2 interviews with other staff. Across the 70 interviewees, the average time spent in the existing position at the time of the interview was 7 years. Ninety-nine percent of the respondents have prior public medical sector experience.

The complete OD survey tool used in baseline is found in **Annex F**.

Capacity Building for In-service and Pre-service Training

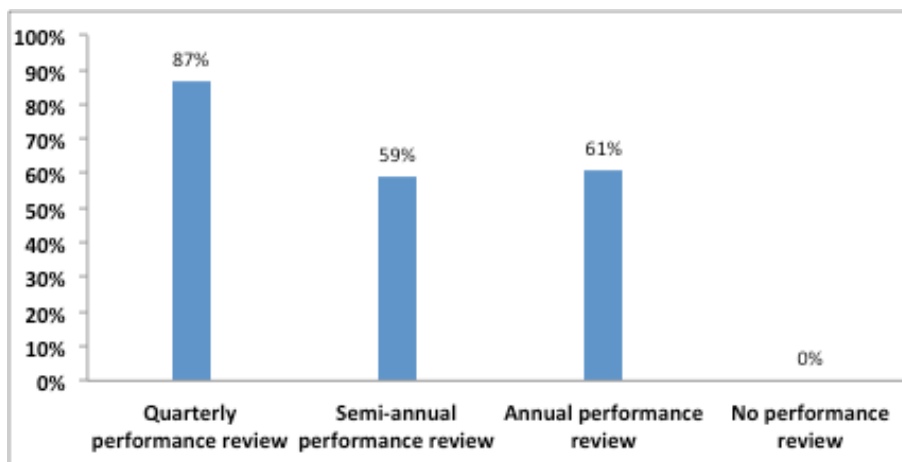
Figure 3.49 displays the effort made by ODs towards capacity building, both at the OD and at the health center level in the fiscal year 2015. Among the 70 ODs interviewed, 71 percent assessed the training needs, 81 percent organized in-service training, and 74 percent helped with career planning for staff across ODs and health centers. Ninety-three percent of the ODs provided technical assistance to health centers to improve their performance. The technical assistance mainly covered quality of care, facility infrastructure, service delivery, technical and managerial advice, vaccination support and woman and child support. Sixty-seven percent of the ODs had conducted activities to improve professional development and management in the district in the six months prior to the survey. Ninety-nine percent stated that they disseminated relevant analysis on health data and best practices to health centers in the district in the past year.

Figure 3.49 Proportion of Capacity-building Activities by OD, 2015 (percent)



With participation from health centers, 87 percent of all surveyed ODs conducted quarterly performance reviews, 59 percent semi-annual reviews, 61 percent annual reviews and 1 percent no reviews. **Figure 3.50** represents this data for the fiscal year 2015. Seventy-six percent reported assessing the performance of health center staff in their district. Overall, 64 percent ODs set and awarded financial and non-financial incentives for district health staff; approximately 16 percent set both, financial and non-financial incentives. Eleven percent set only financial and 37 percent set only non-financial incentives. The incentives were primarily determined using staff satisfaction scores, facility performance reviews, L2 assessments and self-assessment of quality. Of these, staff satisfaction scores and self-assessment of quality were the most used (67 percent usage of each).

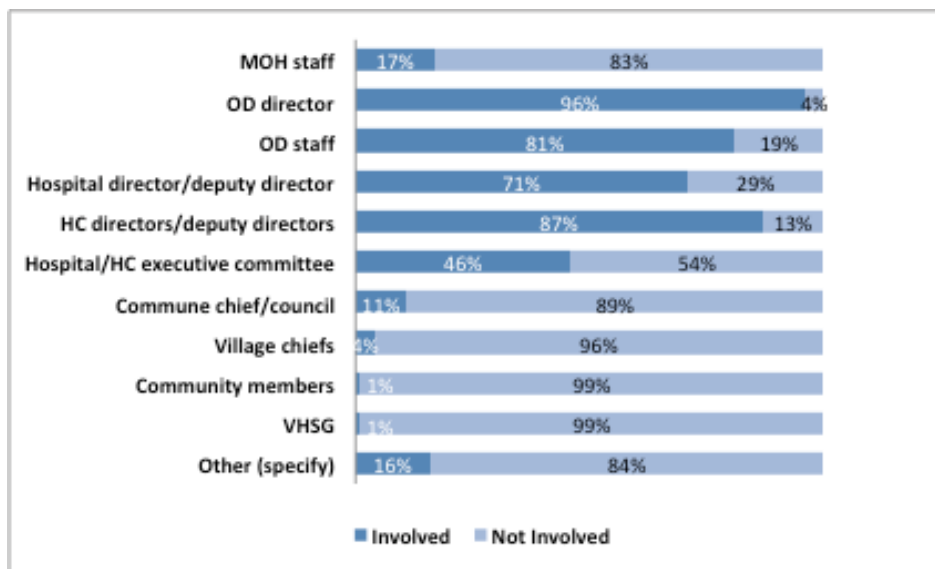
Figure 3.50 Frequency of Performance Reviews by OD, 2015 (percent)



Planning, Monitoring and Supervision

Seventy ODs reported that an OD work plan was developed for the 2016 financial year. Across all ODs, the OD director (96 percent), OD staff (81 percent) and the health center director (87 percent) were the most involved developing this work plan (**Figure 3.51**). Ninety-six percent (67 of the 70 ODs) of the ODs reported identifying priority health-related activities in the plan. At least 75 percent of all ODs listed one of the following services as priorities, ordered in the frequency mentioned: postnatal care (94 percent), prenatal care (93 percent), immunization (93 percent), institutional delivery, curative consultations, family planning/reproductive health, tuberculosis, health promotion and monitoring, integrated management of childhood illness and HIV/AIDS.

Figure 3.51 Participants in the 2016 Work Plan Development (percent)



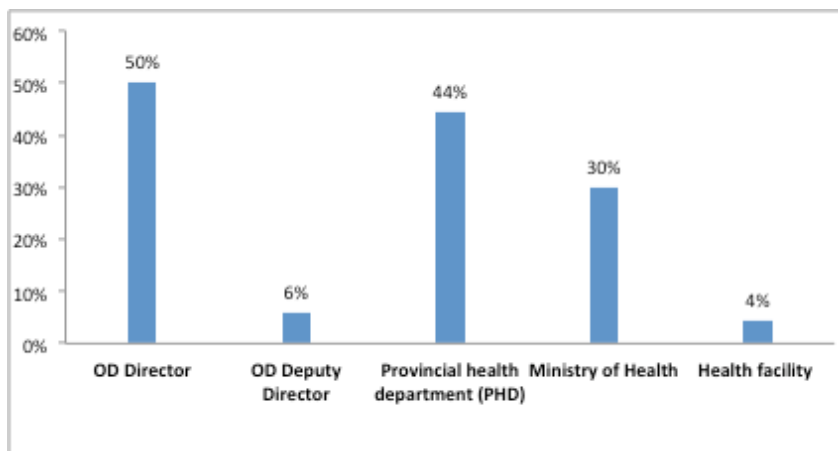
The responsibility for monitoring and evaluation (M&E) of the health center level falls within the domain of the ODs, with 90 percent of the ODs reporting that they conduct M&E activities. All of the 18 ODs in the high average-high variability L2 score stratum reported M&E activities. In contrast, only 81 percent of the 16 low average-low variability L2 score ODs reported conducting M&E activities. Eighty-seven percent of all the 70 ODs monitored coverage on mandatory trainings and arranged trainings. Almost half (47 percent) of the ODs stated that they conduct M&E activities monthly, while 34 percent stated doing so quarterly. Fifty-eight percent of the ODs reported that the provincial health department conducts M&E activities quarterly. It is not known if the provincial health department conducts M&E on the OD or the health center, or both. Over 95 percent of the ODs reported reviewing maternity, newborn and child care clinical records and registers. Over 97 percent reported examining whether facilities had enough skilled health staff.

Operational District Staff

Half of the OD reported that the OD Director had the authority to hire new OD staff (**Figure 3.52**). Forty-four percent reported that this authority vests with the Provincial Health Department, while 30 percent stated that it lies with the Ministry of Health. Health facility staff did not have a say in the hiring of OD staff; only 4 percent stated that the health facilities reported being able to do so. In comparison, on OD staff dismissals, 37 percent reported that the authority vests with the OD Director, 56 percent stated that it vests with the Provincial Health Department and 43 percent said with the Ministry of Health. Dismissal of OD staff appears to fall more within the responsibility of hierarchical levels above the OD as

compared to the hiring of OD staff. Only one of the 70 ODs surveyed stated that the authority to dismiss OD staff lay with the head of the health facility.

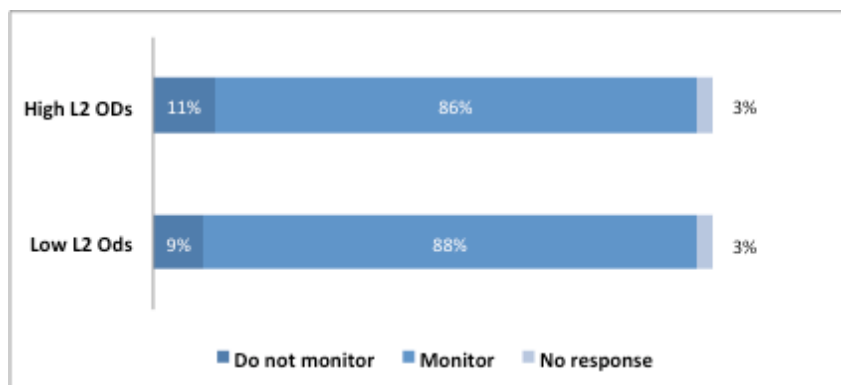
Figure 3.52 Authority to Hire New OD staff (percent)



At the time of the survey, the average number of staff in an OD office was 25. Across all ODs, at the 25th percentile the number of staff in office is 13, at the median (50th percentile) 17, and at the 75th percentile 21. There is little variation in the number of staff across the quartiles of ODs staff between high L2 score and low L2 score ODs, even when disaggregated by variability in L2 scores. The survey indicates that on average the ODs are growing in size, that is, in the number of staff in office. In the year before the survey, the average number of staff hired across all ODs was 17 and the average number of staff that stopped working was 1.7. There is little variation in the number of new staff across the quartiles of ODs staff between high L2 score and low L2 score ODs. However, the maximum number of staff who stopped working, the low L2 score ODs reported that 11 staff left, while the high L2 score ODs reported that 6 members left.

Financial Planning and Budgeting

Figure 3.53 Proportion of OD Monitoring of District Health Expenditures in 2015 (percent)



Ninety-three percent of the ODs reported having prepared an annual budget for the 2015 fiscal year. The budget comprised an allocation to services and activities within the OD. Eighty-seven percent of the ODs monitored district health expenditures against the agreed budget. There is negligible difference in the number of ODs across high and low L2 score ODs monitoring expenditure (**Figure 3.53**).

The average funding across ODs for the fiscal year 2015 was 1.98 billion KHR (about US\$0.5 million). The 25th percentile reported average funds of 1.07 billion KHR (about US\$0.27 million), while ODs in the 90th percentile reported an average of 4.29 billion KHR (about US\$1.07 million). The MEF (National budget) contributed the most to total funds at 54 percent of total funds across all ODs, followed by user fees at 15 percent. Service delivery grants (only fixed grants as of 2016) and HEF reimbursements contributed 10 percent and 9 percent respectively. All other sources, such as donors and NGOs, contributed less than 5 percent each, totaling 12 percent of all funds.

Table 3.10 Funding Sources for ODs in Fiscal Year 2016

Source of Funding	Number of OD recipients (out of 70)	Percentage of all OD recipients (%)
MEF (National budget)	69	99
User fees	56	80
HEF reimbursements	46	66
Midwife incentives	38	54
Service delivery grants	18	26
NGO	13	19
Health insurance	9	13
Donor	9	13
Other	3	4

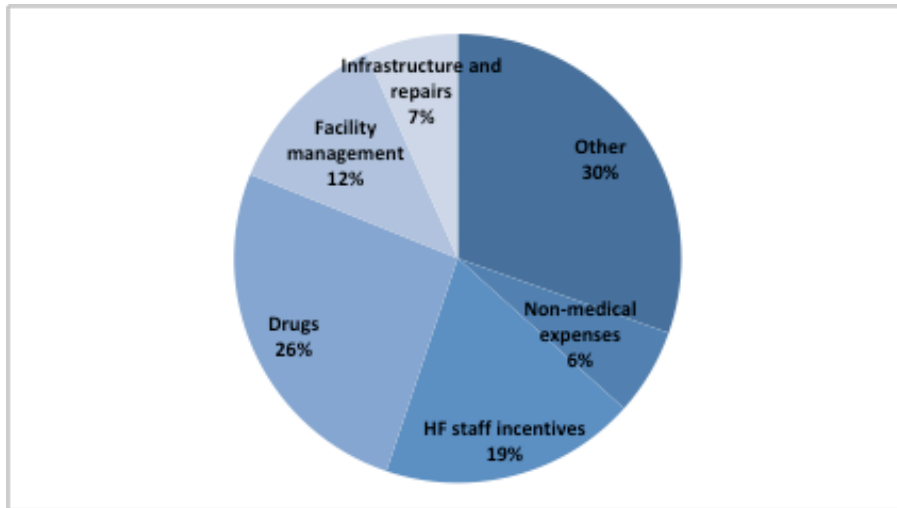
For the fiscal year 2016, almost 100 percent (69 out of 70) of the ODs reported receiving funding from the national budget. Eighty percent ODs reported receiving funding from user fees, 66 percent from HEF reimbursements and 54 percent from midwife incentives. All other sources of funding applied to less than half of the 70 ODs (**Table 3.10**).

Expenditures

As many as 36 percent of the ODs reported having complete freedom over choosing how to spend all their funds; 10 percent reported having no freedom at all. No statistically significant results were found on testing for the relation between funding sources and freedom in spending funds¹⁰. Expenditure on drugs accounted for the highest spending category at 26 percent of all budget expenditures (**Figure 3.54**). Wages for staff recruited by ODs comprised less than 1 percent of all expenditures. In comparison, wages for staff recruited by facilities comprised about 4 percent of all expenditures. Correspondingly, incentives to OD staff were approximately 5 percent of total expenditure and incentives to facility staff approximately 19 percent. Staff transport accounted for less than 1 percent of total expenditure.

¹⁰ Regression analysis was undertaken on ODs' freedom to choose how they spent their money, against all funding sources in the fiscal year 2015.

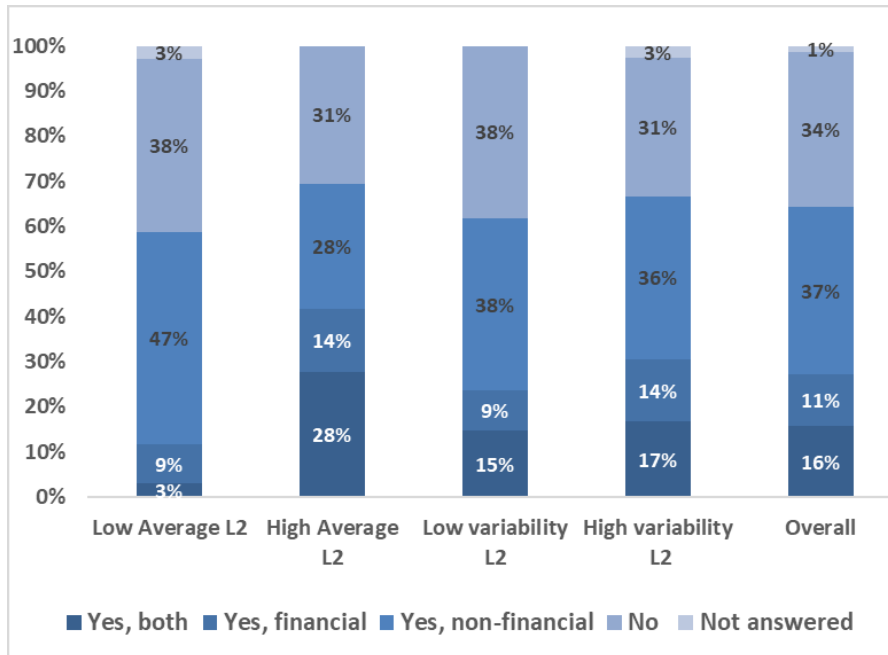
Figure 3.54 Expenditure Categories for Fiscal Year 2015



Incentives and Motivation

Sixty-four percent of the surveyed ODs set and awarded financial and non-financial incentives for district health staff. The percentage of surveyed ODs awarding financial and non-financial incentives is fairly consistent across high and low ODs when classifying by variability in L2 score (**Figure 3.55**). When using the L2 average scores, only 3 percent of the low score ODs reported awarding both financial and non-financial incentives as opposed to 28 percent in the high score ODs. Forty-seven percent of low average L2 score ODs awarded non-financial incentives as compared to 28 percent of the high average L2 score ODs. Among SOAs (20 of 70 ODs studied), 45 percent provided financial and non-financial incentives, 35 percent only financial, and 15 percent only non-financial incentives.

Figure 3.55 Incentives Awarded Disaggregated by L2 scores (percent)



Forty-four percent of all ODs used staff satisfaction scores to determine these incentives, 31 percent used facility performance reviews, 29 percent used L2 assessments and 44 percent used self-assessments of quality. These categories are exclusive of each other and hence, ODs may have used a combination of the criteria to determine the incentives.

Fifty-nine percent of the interviewees thought that the OD staff is highly motivated and 32 percent thought the staff is motivated. Less than 3 percent of the respondents felt that OD staff is either demotivated or neither motivated or demotivated. However, 4 percent of the respondents stated that they thought the staff is highly demotivated. ODs that reported staff as being demotivated or highly demotivated were predominantly in the high average-high variability L2 score stratum. HEF, SDG and Midwifery incentives were thought to have a big improvement on staff motivation, according to 54 percent of the respondents. Forty-one percent considered these incentives to have a moderate improvement on staff motivation.

The five biggest challenges to effectively carry out responsibilities were getting sufficient OD equipment and infrastructure (57 percent), shortage of available medical staff (49 percent), getting sufficient facility equipment and infrastructure (47 percent), motivating staff (44 percent) and lack of sufficient funds to improve practices of facilities (37 percent).

3.8 Synthesis of Existing Analyses

(A) L2 Assessment Score Analysis

Key Finding

This section uses detailed, disaggregated data available from URC for nine provinces, on the quality of care, mainly the process of care, routinely offered at public health facilities:

- SOA and HEF Health Centers consistently scored better than non-SOA and non-HEF ones on average across all vignettes.

A comprehensive Level 2 Quality of Care Assessment was conducted in Cambodia during 2015, wherein a team led by MOH conducted the assessment in 15 provinces while a team led by URC undertook the survey in nine provinces. The main objective of the assessment was to collect baseline data on the quality of care, mainly the process of care, routinely offered at public health facilities. This section uses detailed, disaggregated data available from URC for nine provinces that will subsequently be updated based on data from all 24 provinces once the disaggregated data from MOH provinces is also available (which has already been requested). However, it is likely that the patterns emerging from the nine provinces will also hold true for the data from all 24 provinces. It is important that any interpretation here be made with caution. For example, this analysis provides “snapshots” of facility performance on clinical vignettes. Any correlation between scores and facility characteristics may be due to systematic differences between facilities and may not reflect causal effects.

Table 3.11 reflects the number of facilities and the type of clinical vignettes for which the L2 assessment data was available for this analysis.

Table 3.11 Vignette Data Availability for MPA Health Centers

Abbreviation	Description	Number of facilities with complete data
ANC1	Antenatal care vignette 1– normal visit	494
ANC2	Antenatal care vignette 2 – headache and anemia	462
FP1	Family planning vignette 1 – changing method from oral contraceptives	209
FP2	Family planning vignette 2 – new client for oral contraceptives	487
FP3	Family planning vignette 3 – new client for implant	326
FP4	Family planning vignette 4 – new client for intrauterine device	416
OPDP1	Outpatient pediatric care vignette 1 – tuberculosis for HC	446
OPDP4	Outpatient pediatric care vignette 2 – diarrhea and severe acute malnutrition for HC	425
PNC1	Postnatal care vignette 1 – discharge after delivery	456
PNC2	Postnatal care vignette 2 – normal visit	418
WCH1	Well-child care vignette 1 – normal visit	443

Interpreting the graphs in this section: In **Figure 3.51** and subsequent graphs visualizing L2 vignette scores, each point in the scatter represents the score of an individual facility for a vignette, and so the lowest and the highest points of each scatter show the minimum and the maximum scores for a given vignette. The horizontal bars represent the 75th and 25th percentiles; the dark dot is the median. The score itself has been calculated by dividing the number of checked items by the total number of items in the instrument for a vignette. In other words, the scores are simple averages across all vignette items. Scores are only calculated for facilities with complete data and shown here in percent.

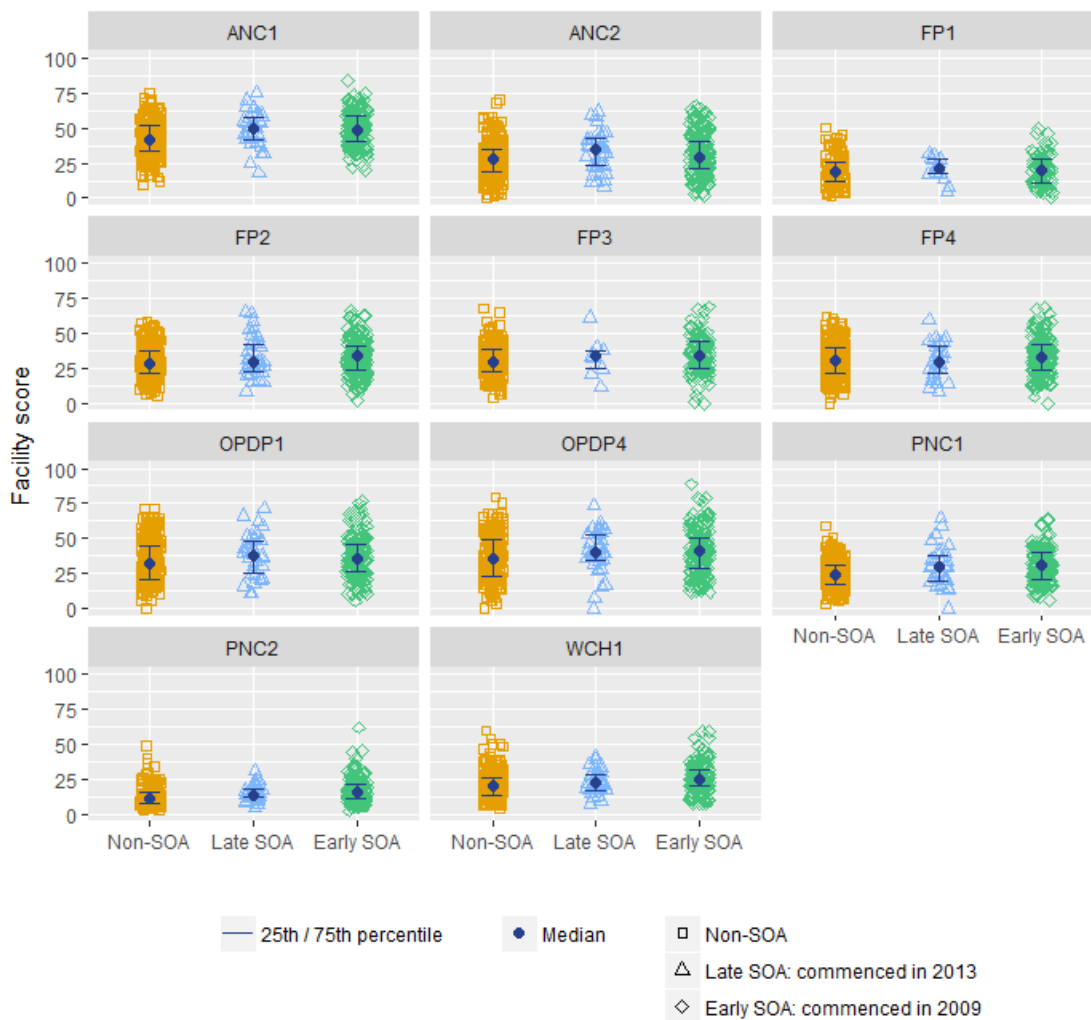
In general, wide variation is observed in vignette scores for MPA Health Centers. Visually, there is substantial overlap of the distribution between non-SOA Health Centers and SOA Health Centers across all vignettes. Statistical tests of the difference in mean scores suggest that on average, **SOA Health Centers scored higher than non-SOA Health Centers in all quality vignettes, except one** (this exception was in family planning vignette 1 – changing method from oral contraceptives (FP1), where there is no significant difference between the two groups and the score is generally low).¹¹

Figure 3.51 Distribution of Vignette Scores by SOA Status: MPA Health Centers



Figure 3.52 Distribution of Vignette Scores by SOA Status and Commencing Year: MPA Health Centers

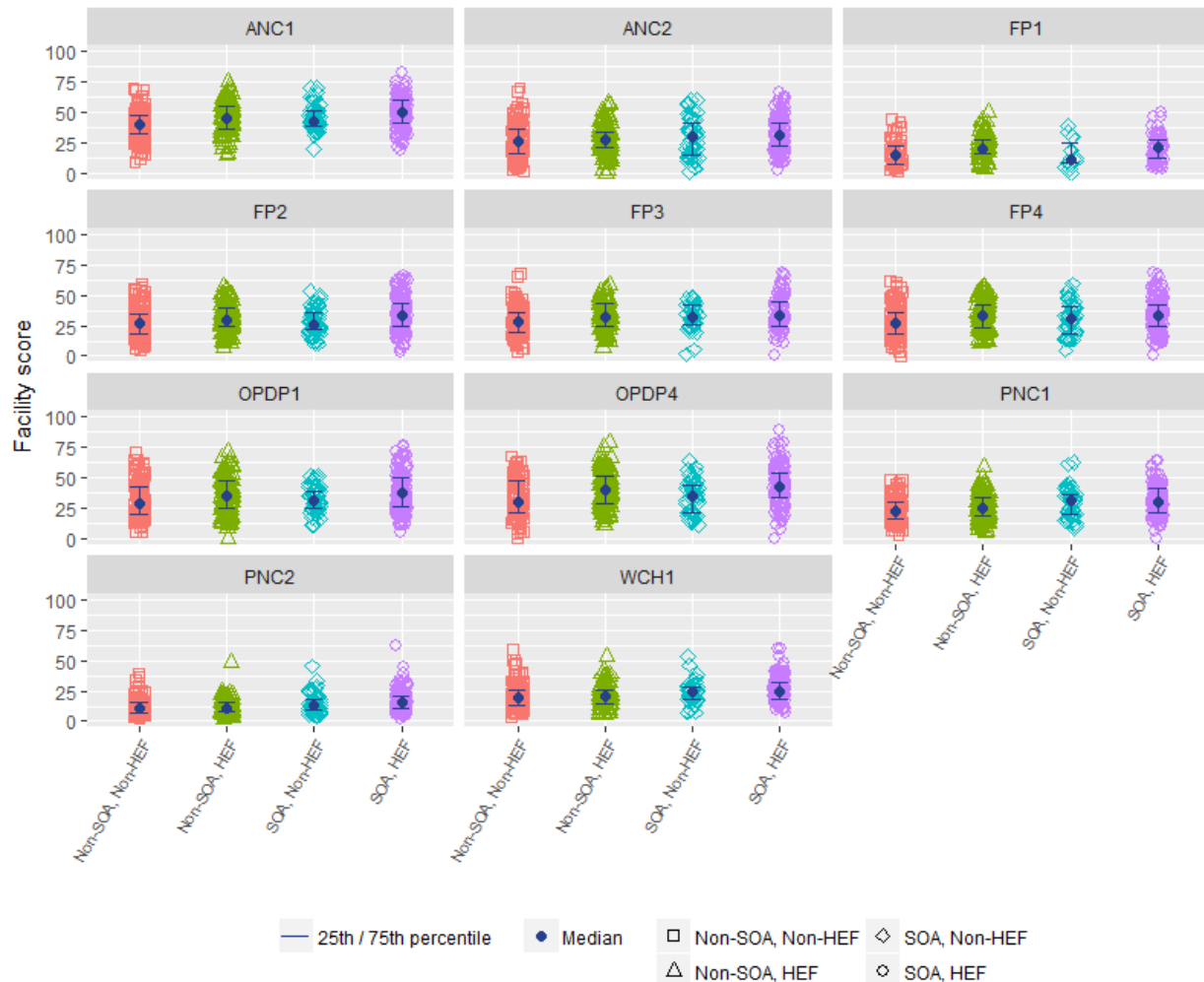
¹¹ Based on one-sided two-sample t-tests with unequal variance, using a p-value of 0.05 as cut off



When the SOA Health Centers are further broken down by the year SOA started, a pattern relatively similar to that in Figure 3.51 is observed (Figure 3.52). **Statistical tests indicate no statistically significant difference in mean scores between early SOA and late SOA Health Centers** in each of the vignettes, except for well-child care vignette 1 – normal visit (WCH1), where early SOA Health Centers did better than their late SOA peers on average. Consistent with this graphical evidence, when the source of variation in scores is decomposed using statistical models (results not shown), it is seen that most of the variance is at the Health Center level and cannot be explained by SOA status, province, or OD.

Figures 3.51 and 3.52 compare L2 vignette scores by both SOA and HEF status. **Figure 3.53** analyzes these together, and suggests that the main difference exists between SOA, HEF Health Centers and non-SOA non-HEF ones, where **SOA, HEF Health Centers consistently scored better than non-SOA, non-HEF ones on average across all vignettes.**

Figure 3.53 Comparison of Vignette Scores by SOA and HEF: MPA Health Centers



Administrative data from the Health Management Information System (HMIS) of the MOH was also analyzed in the same way to differentiate across SOAs and HEF facilities, as was done for the L2 assessment scores. Figures 3.54 and Figure 3.55 show the service volume by facility department based on HMIS data for facilities involved in L2 quality assessment for 2014 – corresponding to the same year when data collection for L2 assessment was done. The “Total” service volume is the sum of delivery, inpatient and outpatient volumes. The survey is interested in the allocation of patient care across different types of facilities.

It may be noted that service volume is not equivalent to productivity, because facility inputs are not considered in these measures. Therefore, a facility with high volume may simply reflect more staffing or longer hours of operation during the day, unless it is reasonable to assume that all Health Centers are similar with regard to these dimensions. Since inputs are not observed in the data, volume is not interpreted as productivity.

As suggested in Figures 3.54 and 3.55, **Figure 3.56 shows that SOA and HEF facilities in general serviced higher volume in the outpatient department, which also contributed to higher total service volume.** This is not surprising because outpatient services accounted for over 80 percent of the service provided in MPA Health Centers. There were much fewer inpatient cases as expected, but outliers were observed

among non-SOA facilities, which could be due to misclassification of facilities or other data issues (the non-SOA facility that reported close to 800 inpatient cases was Samraong Sambo in Kampong Speu).

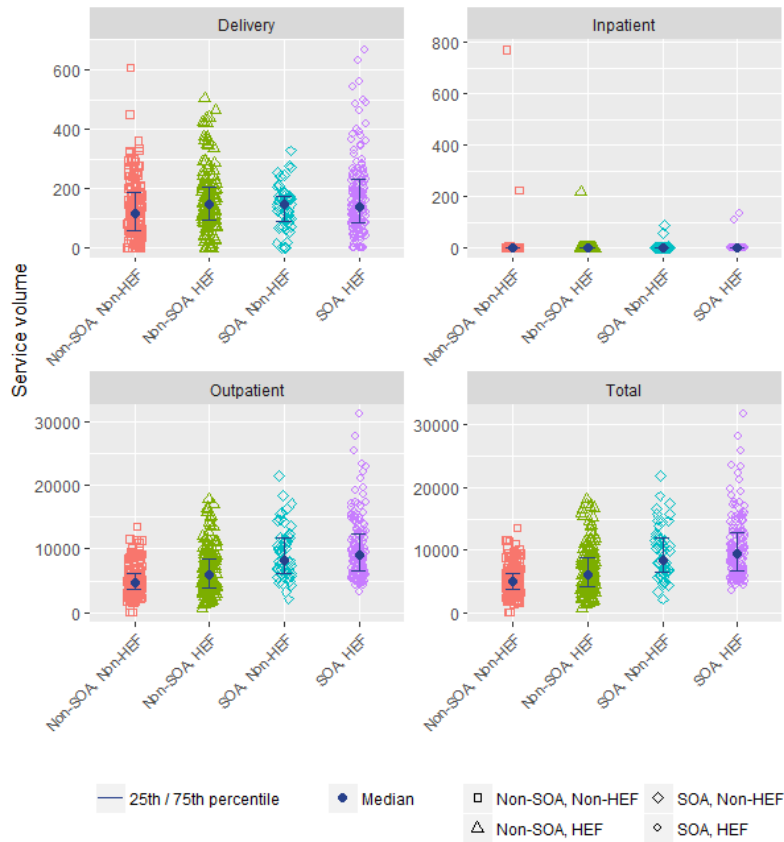
Figure 3.54 Service Volume by Facility Department and SOA Status: MPA Health Centers



Figure 3.55 Service Volume by Facility Department and HEF: MPA Health Centers



Figure 3.56 Service Volume by Facility Department, SOA and HEF: MPA Health Centers



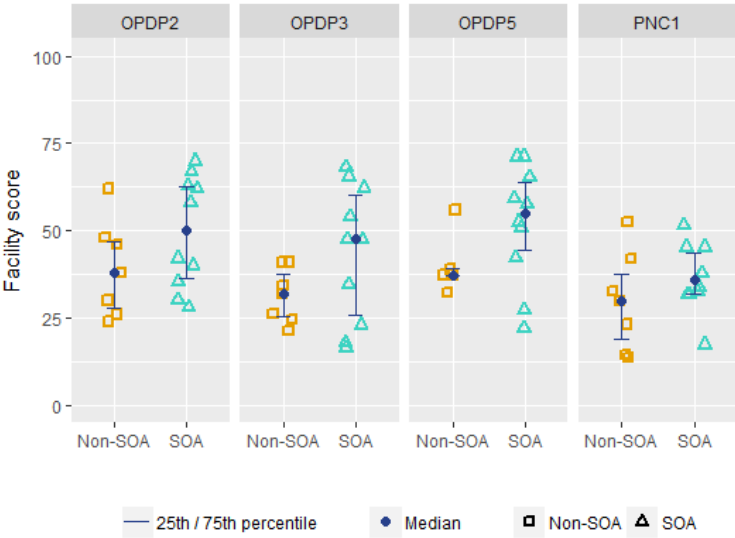
L2 assessment data for CPA1 referral hospitals were also analyzed in the same way as for health centers above. Because of the small sample size for CPA1 Referral Hospitals in the data for a number of vignette modules, the focus was on four vignettes that have more than 10 data points (**Table 3.12**). **Compared to Health Centers, scores for CPA1 Referral Hospitals seem to be less dispersed (Figure 3.57). In addition, according to statistical tests, CPA1 hospitals did outperform Health Centers** in the outpatient pediatric care vignette – tuberculosis (OPDP1 for Health Centers and OPDP2 for Referral Hospitals), outpatient pediatric care vignette – diarrhea and severe acute malnutrition (OPDP4 for Health Centers and OPDP5 for Referral Hospitals), and postnatal care vignette 1 – discharge after delivery (PNC1). There is no corresponding vignette for Health Centers for OPDP3.

Table 3.12 Vignettes for CPA1 Referral Hospitals

Abbreviation	Description	Number of facilities with complete data
ANC1*	Antenatal care vignette 1– normal visit	4
ANC2*	Antenatal care vignette 2 – headache and anemia	4
FP1*	Family planning vignette 1 – changing method from oral contraceptives	2
FP2*	Family planning vignette 2 – new client for oral contraceptives	5
FP3*	Family planning vignette 3 – new client for implant	4
FP4*	Family planning vignette 4 – new client for intrauterine device	8
OPDP2	Outpatient pediatric care vignette 2 – tuberculosis for RH	17
OPDP3	Outpatient pediatric care vignette 3 – acute respiratory infections and severe acute malnutrition for RH	17
OPDP5	Outpatient pediatric care vignette 5 – diarrhea and severe acute malnutrition for RH	15
PNC1	Postnatal care vignette 1 – discharge after delivery	17
PNC2*	Postnatal care vignette 2 – normal visit	0
WCH1*	Well-child care vignette 1 – normal visit	0

Note: *Excluded from analyses due to insufficient sample size

Figure 3.57 Distribution of Vignette Scores by SOA Status: CPA1 Referral Hospitals



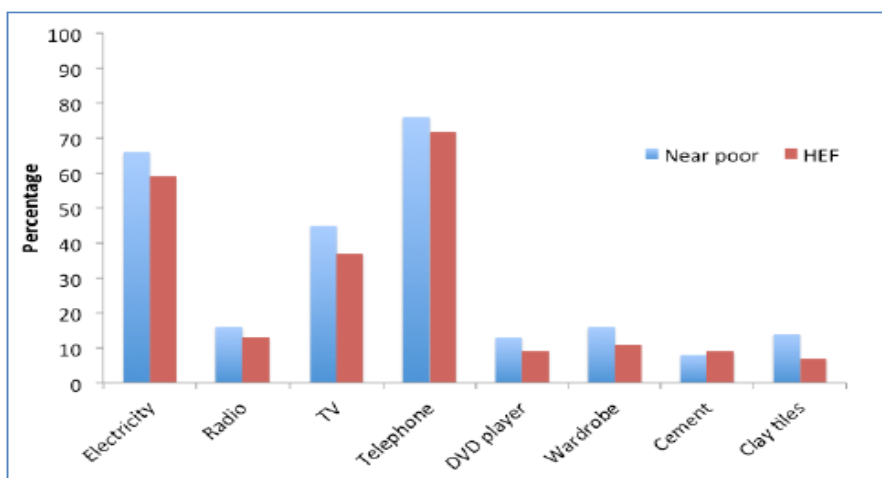
(B) HEF Utilization Survey

Key Findings

- HEF beneficiaries and the near poor were very similar in most assets and wealth indicators, including monthly income, which was around US\$150 on average in both groups.
- HEF can reduce health costs - both in OPD and IPD - by one-sixth and avoid catastrophic payments.
- The near poor spent almost three times more than HEF beneficiaries during their last hospitalization.
- Patients with a chronic illness were 43 percent more likely to use an HEF card for OPD care.

In a survey undertaken by GIZ and World Bank, a total of 2,003 households were interviewed across 20 ODs. 995 households were current HEF members (49.7 percent), and 1,008 households qualified for the control group (classified as near poor). HEF beneficiaries and the near poor (control group) were very similar in most assets and wealth indicators, including monthly income, which was around US\$150 on average in both groups (Figure 3.58). Forty-six percent of the control group could, potentially, have been considered as poor according to the wealth assessment used in the selection of PAC members (wealth indicator score below 18).

Figure 3.58 Assets Owned by Control Group and HEF

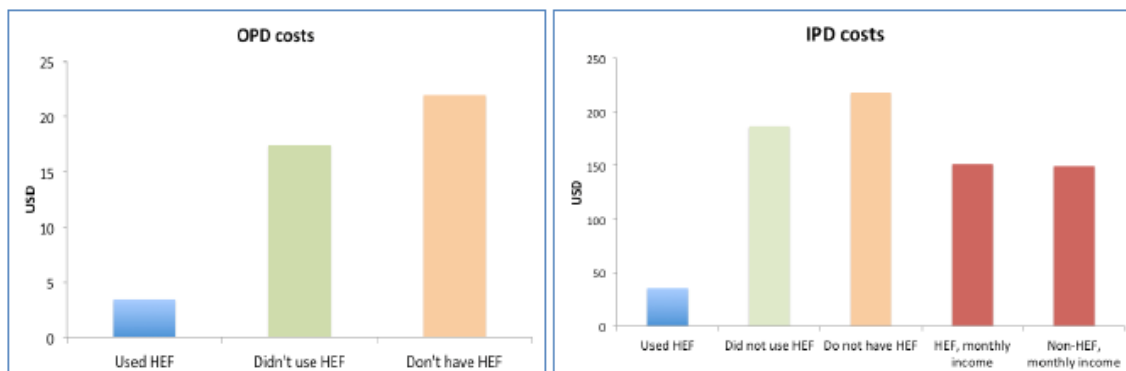


The near poor spent almost three times more than HEF beneficiaries during their last hospitalization, which represented their entire monthly income. However, it is important to notice that, within the HEF group, a substantial proportion of beneficiaries did not use their entitlement. Thus, the difference in health expenditure between HEF real users (as opposed to just beneficiaries) and the near poor is even larger.

HEFs, when used, can reduce health costs - both in OPD and IPD - by one-sixth and avoid catastrophic payments (Figure 3.59). HEF beneficiaries that used their card spent, on average, US\$4 per OPD visit and about US\$40 for hospitalization. However, HEF beneficiaries that did not use their cards (and sought private sources of care), spent over four times more: US\$17 per OPD treatment and US\$190 per hospitalization, respectively. The near poor – who have a similar level of self-reported income - spent six times more on both OPD and IPD care compared to HEF users. Both the lack of HEF utilization (and the

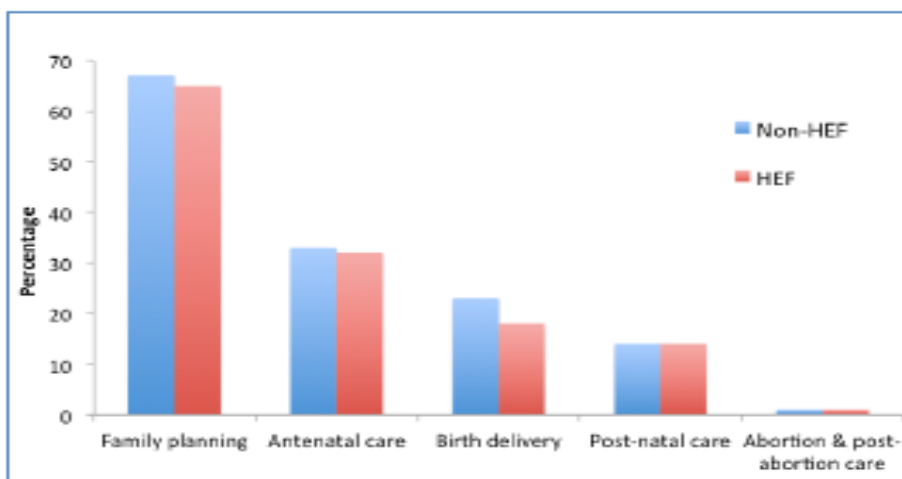
lack of HEF entitlement) can lead to catastrophic payments, surpassing, substantially, the monthly income.

Figure 3.59 OPD and IPD Costs According to HEF Entitlement and Use of Card



The public sector is the preferred source of reproductive health care, and possessing an HEF card (compared to the near poor) did not increase the demand for these services. Over 60 percent of all types of reproductive services were covered by the public sector, and there was no difference between HEF beneficiaries and the near poor (Figure 3.60). Family planning was by far the most demanded service. Almost 70 percent of the women went for family planning at least once in the previous year. Antenatal care (ANC) was the second most demanded service (35 percent) but only half of the women that attended ANC had a postnatal follow up. Compared to non-HEF holders (near poor), HEF beneficiaries did not demand reproductive health services more often.

Figure 3.60 Public Health Facility Utilization by Control Group and HEF Beneficiaries



Patients with a chronic illness were 43 percent more likely to use an HEF card for OPD care, although no statistically significant difference was seen for IPD. The higher use of HEFs for OPD services among chronically ill individuals was mainly related to follow-up checkups and medications for conditions such as diabetes and hypertension.

In line with the majority of HEF beneficiaries, public facility directors and staff responded that the main reason why HEF beneficiaries use their health facilities is because the card provides them with free treatment. On the other hand, they cited distance, lack of knowledge about their HEF entitlement, and hospital's staff attitude, as the main cause for underutilization. Similarly, HEFO staff pointed to distance, transportation, and dissatisfaction with the quality of treatment and health facility services as the two main reasons why HEF beneficiaries do not use their cards. Moreover, most Village Health Support Group (VHSG) volunteers indicated that the primary reasons for non-use of HEFs (and use of private providers) were related to treatment/service quality and access; whereas the main reason why public facilities were used by HEF beneficiaries is because the card made services free of charge, similar to the responses given by HEF beneficiaries and public facility staff.

4. Discussion and Policy Implications

This report blends a review of the existing body of knowledge in published literature, an analysis of administrative data and field mission observations, with new findings emerging from the baseline survey conducted to evaluate the impact of H-EQIP, and particularly of the recently restructured Service Delivery Grants.

The report focuses on two key interventions that have been the frontrunners among several health financing innovations in Cambodia - the Health Equity Fund system and Service Delivery Grants. While the baseline survey was being carried out, emerging findings were compiled from the early roll out of the fixed lump sum grants introduced by the Royal Government of Cambodia in 2016 that formed part of the Health Equity and Quality Improvement Project (H-EQIP). As such, the impact evaluation design focuses on the performance-based SDGs for rigorous scientific evidence of impact, but the policy implications need a broader perspective, even for the Health Equity Fund system where such rigorous studies could not be carried out as the program rolled out and scaled up.

The impact evaluation serves an important purpose of providing evidence of the effectiveness of the SDG program to key stakeholders, and helps facilitate the achievement of H-EQIP objectives in conjunction with those of the broader health system by guiding policy dialogue. As outlined in Chapter 2, the SDG program was implemented at health facilities (health centers and referral hospitals) and health administrative offices (PHD and OD offices) with a central focus on improving the quality of health care delivery. Specific intervention components span across improving infrastructure, managerial capacity and clinical competencies, by means of the phased roll out of standardized quality assessments, institutionalized pre-service and in-service training, organization of regular meetings and production of quality reports. Based on the measurement of these interventions, the health facilities and health administrative offices received performance-based SDGs that serve as an additional source of revenue to be spent on the operations and staff incentives. This is expected to continue the positive virtuous circle of quality improvement activities at the sites of intervention, which will have an indirect impact on the communities and households.

Figure 4.1 revisits the areas of expected impact at OD offices, health centers and households, in parallel to which the key baseline findings from Chapter 3 are outlined for discussion. The results in the OD office and Health Center columns represent the supply-side context, outlining the key findings from the OD, health facility and health worker surveys, and partly from the patient exit survey (focused on content of care); the results in the Household column represent the demand side with key findings from the community, household and maternal and child health surveys, and partly from the patient exit surveys (with a focus on patient opinion).

Figure 4.1 Expected Areas of Impact (based on Theory of Change)

OD Office	Health Center	Household
<ul style="list-style-type: none"> • Improved monitoring and evaluation • Improved financial autonomy & managerial capacity • Increased motivation and morale of OD staff • Increased availability of necessary supplies and consumables 	<ul style="list-style-type: none"> • Improved monitoring and evaluation • Improved financial autonomy & managerial capacity • Improved perceptions of quality of care by health worker • Increased motivation and morale of health worker • Improved health worker clinical competency • Increased availability of health workers • Improved use and functionality of available infrastructure • Increased availability of necessary supplies and consumables 	<ul style="list-style-type: none"> • Improved perceptions of quality of care • Increased demand and access to health care at health center • Improved equity • Improved financial protection • Improved patient satisfaction

Baseline Findings (Context):

OD Office	Health Center	Household
<ul style="list-style-type: none"> • 47% of the ODs conduct monthly M&E of health centers; 34% quarterly • 63% assessed the training needs, 63% organized in-service training, and 63% helped with career planning for staff at health centers • 64% ODs set and awarded financial & non-financial incentives for OD staff • 93% of the ODs prepared an annual budget for the 2015 fiscal year; 87% of the ODs monitored OD expenditures against the agreed budget • 36% of the ODs reported having complete freedom on resource allocation; 10% no freedom at all • Expenditure on drugs accounted for the highest spending category at 26% of all budget expenditures • 59% of OD directors think that the OD staff is highly motivated; 32% think the staff is motivated 	<ul style="list-style-type: none"> • 50% of facilities owned a functioning computer, 44% had access to internet • 27% disagreed or strongly disagreed on having enough authority to obtain the resources for the facility (drugs, supplies or funding) • Low satisfaction on quantity of medicine (54%) and equipment in facility (44%) • Satisfaction on salary was at 37% • 45% of health workers currently engaged in other economical activities as their secondary job • 86% and 95% of total ANC patients received the measurement of weight and blood pressure, respectively • HEF patients received more laboratory services than non-HEF patients: blood sample (66% HEF, 27% non-HEF), urine sample (43% HEF, 8% non-HEF) • Almost all children received weight measurement; 13% HEF/9% non-HEF children received height measurement; 3% HEF/2% non-HEF children received upper arm circumference measurement 	<ul style="list-style-type: none"> • Lower than 60% of HEF household heads understood their benefits towards indirect cost exemption • 34% of HEF cardholders at health centers reported being reimbursed some of the transport costs • The most accessible health center was on an average about 3 km away from the villages; the average distance to drug seller was 1km from the villages • 83% of HEF holders visited OPD from a private health provider. 45% HEF holders visited IPD from a private health provider • 49.4% of HEF households and 49.8% of non-HEF households sought care at pharmacy and drug seller at the most recent visit • 94% of HEF households and 91% of non-HEF households expressed Out-Of-Pocket expenditures on medicine

Utilization of Health Equity Fund System

With respect to HEFs, there are several persisting challenges that have been identified by the existing body of published evidence, and the emerging findings from the baseline survey, which suggest where future efforts at improving the program need to be directed. In particular, the competency and in some cases, also the attitude of providers at public facilities has been below expectations, which has led to

underutilization of public health facilities. It is also increasingly clear that indirect costs are important barriers to access among the poorest members of the population, which have deterred HEF beneficiaries from seeking care at public health facilities. The evidence from administrative data suggesting a very significant drop in utilization when mechanisms to address such indirect costs are not functional for any reason, further strengthens this line of thought. An emerging area for attention in future years, with the changing burden of disease in the country, is to find better ways to support patients with NCDs who have higher risk of experiencing catastrophic expenses. It seems that these patients have not been able to benefit from their HEF entitlements due to the service availability and competency issues around NCDs, as well as the inability of HEF to cover transport costs related to frequent outpatient visits.

This baseline study findings from mid-2016 report several persisting problems which have already been addressed in H-EQIP design. Thus, for example, different phases of the HSSP2 cofinancing as well as the transition from HSSP2 to H-EQIP have led to temporary delays in availability of funds at the health center level. More recently, however, especially as the timeline for HEF and SDG payments is designed as a disbursement linked indicator, this payment has been very regular and timely - and the impact of this intervention should be visible in midline and endline reports.

The household survey, however, revealed that more than 90 percent of HEF patients have experienced some form of out-of-pocket payment – and that approximately half of HEF and non-HEF households visited a pharmacy and drug seller to seek care, even though 81 per cent of HEF households were aware of their entitlement to free medicines at public facilities. This may also reflect the relative ease and accessibility of medicines through pharmacies and drug sellers, vis-à-vis the health centers, and is an important area to explore for improved utilization of outpatient services under HEF, and to reduce OOP payments. This hypothesis of easier access is supported by the average distance from the villages to health center being 3 km and that to drug seller being 1km. On the other hand, the baseline results show that there was limited availability of resources, and possibly also limited empowerment, at the health center level to effectively manage drug stock-outs, which increased the risk of stock-outs in the community-level health system; this may also be an important factor affecting outpatient utilization under HEFs.

On the positive side, HEFs and SDGs also seem to steadily produce a virtuous circle on facility volumes and perceived quality. Thus, the quality improvement process and outcomes stemming from the SOA scheme may have drawn more patients including those not covered by HEF, thereby generating more user fees and HEF reimbursement. This was witnessed especially at facilities that had more experiences with HEF patients by volume or duration. However, it should be noted that the facilities might also have had other supply- or demand-side interventions in place that may have contributed to this virtuous circle. This virtuous circle also results in the amplification of the utilization of health facilities thereby adding to the impact of these health financing instruments. As such, HEF expenditure has remained below 5 percent of the total public health expenditure in the country, even after nationwide roll out. This incremental performance-linked payment provides the much needed resources and incentives to create a significantly higher output from the underlying public health investments.

Quality of Care

It is also evident that quality of care remained a large pending agenda at the time of the baseline survey. Given that much attention is being devoted to this very aspect of health centers and health workers' functioning through the intervention itself, it will be interesting to see how this moves forward in the midline and endline surveys.

A recent publication entitled *Delivering Quality Health Services: A Global Imperative for Universal Health Coverage*, provides a definition of quality of care as “the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge” (WHO, 2018 #58). The definition extends to seven characteristics of health services: effectiveness, safety, people-centeredness, timeliness, equity, integration and efficiency. Each of these areas could be examined in linkages with the results in the subsequent analyses of the impact evaluation, in order to further examine the weakness associated with the current SDG intervention on improving quality of care as broadly defined in this document.

Early investments being made to improve facility infrastructure, amenities and supplies, using the fixed lump sum SDGs, are already beginning to reveal the enthusiasm and innovations that are being tried out by facilities. It was interesting to see examples where the small investments have created tools (such as newborn packs) that allow greater interaction opportunities with patients, which are being used for health promotion and counseling. Greater clarity on the exact modality and rules surrounding these funds, as sought by the health facilities, would further help the health centers to use these grants to their advantage, for improved patient care. Quality is a key focus for the SDG system, and will remain so for this impact evaluation too.

Managerial Practices, Autonomy and Empowerment

A major area for the impact of H-EQIP is expected to be on the institutional mechanisms, managerial practices, facility autonomy and the changing accountability paradigm at the decentralized level. The baseline context shows that there was limited level of autonomy and satisfaction in the targeted areas for improvement at health center-level, such as the authority to manage resources. Facility level infrastructure and availability of commodities had remained an issue at baseline. For example, suboptimal access to computers and internet, and the lack of a constant supply of electricity, compounded the challenge of having an efficient health information storage and exchange through systems like PMRS, and this in turn had wider ramifications.

Since the health system reconstruction in the late 1990s, when decentralized OD offices were established, Cambodia has adopted different purchasing mechanisms through a performance-based contract from the national to subnational level, and a strong accountability structure between PHD offices and health centers. While the timeframe, modality and financing sources for establishing these contractual relationships have varied from one district to another, the 34 SOA have received much attention for being subject to substantial government support in parallel to the pooled funds under HSSP2.

In what may well prove to be transformative and a game-changer in the Cambodian context, all 1200-odd health centers were opening their bank accounts to directly receive SDG funds electronically, around the time this baseline survey was being conducted - and so the impact of receiving this additional resource, in a timely manner, will be something to watch out for. The changing levels of empowerment and the changing revenue mix at health facilities and OD offices, most notably due to the implementation of performance-based SDG, HEF reforms, and reducing share of external funding, creates several favorable dynamics around equity and sustainability. Improving autonomy and motivation at health facilities is one of the expected impacts of the SDG intervention; refinement in these areas has already been captured via other means of early H-EQIP documentation.

Other Policy Implications

Changing Disease Burden: Noncommunicable Diseases and Chronic Malnutrition

Cambodia's health system will need to rapidly address noncommunicable diseases and the continued burden of chronic malnutrition, as it faces an epidemiological transition. HEFs and SDGs may well become the platforms to bring about systemic capabilities for such an evolution of the system, and will remain an area for the impact evaluation to explore and document. In terms of current status, anecdotal evidence from health facilities suggests that patients visit clinics or hospitals at an advanced stage of noncommunicable diseases (NCD), as their problem was asymptomatic in the early stages and remained undetected. Therefore, it raises a need for the health system to rapidly evolve and address this growing burden of disabilities and chronic illnesses. This also has important implications on the national health system's ability to address treatment costs as late detection can create complications which are far more expensive to treat, or may create permanent damage and the consequent morbidity and loss of productivity.

The household survey revealed that approximately 11 percent of total households indicated to be suffering from any disabilities or chronic illnesses - not very different from the findings of the recent STEPS survey. Among these populations, 18 percent suffered from disabilities, 21 percent from chronic illnesses, and 70 percent from other types of chronic illnesses not previously identified in the survey. In contrast, only a handful of health facilities currently have the capability to diagnose and manage NCDs effectively.

Citizen Engagement, Gender, Outreach and Community Links

With considerably reduced outreach in recent years, driven by the changed resource context, there is an increasing need for stronger community links and outreach, especially to meet the needs of very remotely located communities. This will require changes in the institutional arrangements, finances, health workforce and information system. Going forward, the impact evaluation would provide insights toward the changing situations and roles of health institutions vis-à-vis community-based entities. Only 56 percent of HEF households were aware of the indirect benefit associated with transport reimbursement. While these factors may have a causal link, there may also be other contextual factors worthy of investigation. There was only less than 5 percent difference in understanding of HEF by male and female HEF household heads indicating that access to information has circumvented gender barriers. In terms of patient health-seeking behavior and availability and readiness of service delivery, the baseline context generally reflected a high utilization by women, as the maternal and child health services remained the most common use of the Cambodian health system. Even health workers seem to be more ready for these services - and a two-fold higher proportion of training was received in the maternal health-related subjects such as family planning, antenatal/postnatal care, labor, breast-feeding and growth monitoring, as compared to other non-MCH areas such as communicable diseases, mental health or adult curative diseases. These show that the effects of the previous and existing health interventions focused around maternal and newborn care.

Equity and Sustainability

Ensuring equity is at the heart of the H-EQIP, transcending the highly intertwined and mutually reinforcing architecture of SDG and HEF systems. The household and patient exit surveys can be stratified by HEF status as well as other patient individual and household characteristics, enabling comparisons of areas of impact through the equity lens. The OD and HF surveys capture essential aspects of the SDG and HEF interventions, which can again be stratified according to key characteristics to examine contextual factors that may hinder achieving the expected program outcomes. These will be

invaluable pieces of information in guiding the current and future health policy in Cambodia, given the substantial efforts and resources that have been put into the evolution of these programs.

References

WHO, OECD and WB. (2018) Delivering quality health services: a global imperative for universal health coverage. Geneva.

Annex A: SDG Results Chain

Implementation				Results	
Level	Inputs	Activities	Outputs	Outcomes	Long-term Outcomes
Public Health Facility Health Center (HC) & Referral Hospital (RH)	Equipment - Development of National Quality Enhancement Monitoring Tools (NQEMT) - Development of structured coaching guides/manuals - Tools for assessments (ICT, mamananatalie, neonatalie) - Bank account at each HC Human Resources - Master NQEMT trainers from MOH - Master coaching trainer - Financial management (FM) trainers - Payment Certification Agency (PCA) Cash - First assessment visit per diem for NQEMT assessors from PHD to RH / OD to HC - SDG Funding for HC ¹² /RH: a. Fixed Lump sum SDG (FLSG) b. Performance-based SDG (PBG); NQEMT score-linked	1) Cascade Training - <i>NQEMT assessment for PHD/OD</i> - <i>Coaching for PHD/OD</i> - <i>FM for head & finance officer at each HC</i> 2) Quarterly ex-ante assessment <i>NQEMT assessment on:</i> - <i>Financial management</i> - <i>HEF management</i> - <i>Infection control</i> - <i>Vignettes</i> - <i>Neonatalie & mamananatalie observation</i> - <i>Patient Interviews</i> 3) NQEMT score review & joint HC-OD assessor Quality Improvement (QI) planning 4) Follow-up coaching visit 5) Quarterly PBG disbursement into bank account 6) Quarterly FLSG disbursement into bank account 7) Independent verification of NQEMT scores	Human Resource - Increased number of decentralized trainers and assessors - Increased frequency of testing of health workers' knowledge and clinical skills - Availability of reliable performance score-linked financial rewards for staff (PBG) Management - Increased structured supervision - Timely and consistency of funds - Routine administrative management of HEF cases - Routine financial recording & management - Recording of patient opinions on content of care/satisfaction - Development & tracking of QI plans Infrastructure - Increased sources of investment on eligible items (FLSG/PBG): - <i>Office supplies, drugs, emergency rescue, medical equipment, minor maintenance and repairing</i>	Supply-side - Improved M&E - Improved managerial capacity - Improved financial autonomy - Improved perceptions of quality of care by health worker - Increased motivation and morale of health worker - Improved health worker clinical competency - Increased availability of health worker at health facilities - Improved use and functionality of available infrastructure - Increased availability of necessary supplies and consumables Demand-side - Improved perceptions of quality of care by patients - Improved financial protection - Increased utilization of public health facilities	1. Improved nation-wide quality of care at public health facilities 2. Increased demand and access at public health facilities (linked to SDG 3.8.1) 3. Reduced equity gap in financial protection and quality of care received (linked to SDG 3.8.2) 4. Improved & equitable health outcomes

¹² Additional funds for HC's in a remote area and/or those having patients from indigenous populations

Level	Inputs	Activities	Outputs	Outcomes	Long-term Outcomes
Public Health Admin Office PHD Office & OD Office	Equipment - Development of National Quality Enhancement Monitoring Tools (NQEMT) - Development of structured coaching guides/manuals - Tools for assessments (ICT, mamananatalie, neonatalie) Human resources - Master NQEMT trainers from MOH - Master coaching trainer - Performance Certification Agency (PCA) Cash - First assessment visit per diem for NQEMT assessors from PHD to OD and other PHD - First assessment visit per diem for NQEMT assessors from PHD to RH / OD to HC - SDG Funding for PHD/OD: Performance-based SDG (PBG); NQEMT score-linked	1) Cascade Training - <i>NQEMT assessment</i> - <i>Coaching for PHD/OD</i> 2) Quarterly ex-ante assessment <i>NQEMT assessment on:</i> - <i>Carrying out HC/RH assessment</i> - <i>Coaching for HC/RH</i> - <i>Maintenance of supply-chain</i> - <i>Review meetings</i> - <i>Follow-up on targets</i> 3) NQEMT score review & Joint HC-OD/RH-PHD Quality Improvement (QI) planning 4) Follow-up coaching visit 5) Quarterly PBG disbursement into bank account 6) Independent verification of NQEMT scores	Human Resource - Increased number of decentralized trainers and assessors - Increased frequency of testing of PHD/OD's M&E capability - Increased frequency of testing of health workers' knowledge and clinical skills - Availability of reliable performance-linked financial rewards for staff (PBG) Management - Increased structured supervision - Timely and consistency of funds - Routine administrative management of supply-chain - Routine finance recording & management - Routine HMIS reporting - Development and tracking of QI plans Infrastructure - Increased sources of investment on eligible items (PBG): - <i>Office supplies, drugs, emergency rescue, medical equipment, minor maintenance and repairing</i>	Same as above	Same as above

Annex B: Power Calculations

Original Design and Power Calculations

The original design for the baseline survey was based on a stratified cluster random sample with selection probabilities proportional to size (PPS). The survey will cover 23 provinces with a total of 140 health care centers. Within the catchment area of each center, 20 households were selected for interviews for a total of 2,800 households.

Unit of observation	Sample size
Operational district offices (across 23 provinces)	70
Health facilities (across 23 provinces)	140
Health workers (4 per facility)	560
Patient exit interviews (4 antenatal patients, 4 under-5-child patient caregivers)	1,120
Medical record review (4 per facility)	560
Households (20 per facility catchment area, 10 each HEF vs. non-HEF)	2,800

Calculations based on a statistical power of 0.8 and a significant level of 0.05 indicate the following, for example, outcomes indicate that the above design:

- Can detect an effect size for household-level outcomes of approximately 0.09 for delivery outcome and 0.07 for the payment outcome
- Can detect an effect size of 3.8 percentage points for a facility-level outcome such as the L2 quality scores.

Power Calculations for Households and Facilities

The power calculations are for a clustered randomized-trial. To account for the clustering, the calculations take into account the intra-cluster correlation (ICC, ρ), which is estimated from the existing data and triangulated with ICCs reported in other studies. We assumed a power of 0.8 and a significance level of 0.05.

The calculations below are conservative in that they do not account for the difference-in-difference design, covariates, matching strategies and stratification. As a result, power or precision will likely be better in practice.

Household level

Additional assumptions for the power calculation for household level outcomes are:

- A cluster is defined as the catchment area of a facility.
- Households are randomly sampled from the catchment area. As a consequence the evaluation is not representative of the population level; rather it is representative of households in the catchment area of a facility.

We calculated the detectable effect sizes for two example binary outcomes that correspond loosely to two primary project development objectives:

- Deliveries in public facilities, for children aged 0-5 years during the survey.
- Individuals paying less or equal to US\$1 for a “minor” illness.

The mean values and ICC are calculated from the 2014 Cambodia DHS. One challenge is that the DHS clusters do not conform to the catchment area or even ODs.¹³ As an approximation we used a weighted average of the regional ICC (2/3 weight) and the DHS cluster ICC (1/3 weight). For comparison Table A1 shows ICCs used in other RBF evaluation projects.¹⁴

¹³ Although DHS makes geocoordinates available for the 2014 Cambodia DHS, these are randomly displaced for confidentiality purposes, and not mapped to ODs or facilities. The 2014 DHS has 611 clusters and 18 regions.

¹⁴ See [here](#) for the Rwanda values. Fenn et al. investigate ICCs for child health (wasting, stunting) and services (immunization) across many DHS surveys, at the level of a DHS cluster. They find the ICCs for outcomes to be generally low (most below 0.1), but the ICC for immunization to be generally high (most above 0.1). See [here](#).

The input parameters for the two outcomes are listed in Table A2. The ICC for the delivery outcome is quite high, also compared to the estimate for Rwanda although institutional delivery rates in that setting are substantially lower.

The results from the power calculation are in Tables A3 and A4. The tables show options for different numbers of cluster per arm (control or treatment) and different numbers of individuals sampled within each cluster.

The power calculations indicate that a design with 140 catchment areas (clusters; 70 in each arm) and 2,800 households (20 in each cluster) can detect an effect size of approximately 0.09 for the delivery outcome and 0.07 for the payment outcome.

Table A1: Comparison with other studies

Outcome	Setting	Mean	ICC
Percent children fully vaccinated	DR Congo	45%	0.1 at cluster level (50 clusters in a district) 0.05 at regional level (50 districts in a region) Study assumed 0.05 at district level, after stratification
Percent pregnant women completing 4+ ANC visits	Tajikistan	65.5%	0.052 at catchment-area level
Percent deliveries in facilities	Rwanda	52.1%	0.012 at catchment-area level
Times received PNC care	Rwanda	2.9	0.007 at catchment-area level
Tetanus shot during PNC	Rwanda	65%	0.012 at catchment-area level

Table A2: Input parameters

	Percent delivering in public facility	Percent paying <=\$1 for minor illness
Mean	68%	20%
ICC_weighted	.13	0.08
ICC_cluster	.26	0.15
ICC_region	.07	0.04

Table A3: Results for deliveries in public facilities, for children aged 0-5 years during the survey

ICC	Control mean	Treatment mean	Effect size	N clusters per arm	N clusters total	N indiv. per cluster	N individuals (total sample)
0.135	0.682	0.811	0.128	40	80	10	800
0.135	0.682	0.798	0.116	50	100	10	1000
0.135	0.682	0.788	0.106	60	120	10	1200
0.135	0.682	0.781	0.099	70	140	10	1400
0.135	0.682	0.798	0.116	40	80	20	1600
0.135	0.682	0.787	0.105	50	100	20	2000
0.135	0.682	0.778	0.096	60	120	20	2400
0.135	0.682	0.771	0.089	70	140	20	2800
0.135	0.682	0.794	0.112	40	80	30	2400
0.135	0.682	0.783	0.101	50	100	30	3000
0.135	0.682	0.774	0.092	60	120	30	3600
0.135	0.682	0.768	0.086	70	140	30	4200

Table A4: Results for individuals paying less or equal to US\$1 for a "minor" illness

ICC	Control mean	Treatment mean	Effect size	N clusters per arm	N clusters total	N indiv. per cluster	N individuals (total sample)
0.079	0.204	0.319	0.114	40	80	10	800
0.079	0.204	0.306	0.101	50	100	10	1000

0.079	0.204	0.296	0.092	60	120	10	1200
0.079	0.204	0.289	0.085	70	140	10	1400
0.079	0.204	0.301	0.097	40	80	20	1600
0.079	0.204	0.290	0.086	50	100	20	2000
0.079	0.204	0.282	0.078	60	120	20	2400
0.079	0.204	0.276	0.072	70	140	20	2800
0.079	0.204	0.295	0.090	40	80	30	2400
0.079	0.204	0.284	0.080	50	100	30	3000
0.079	0.204	0.277	0.073	60	120	30	3600
0.079	0.204	0.271	0.067	70	140	30	4200

Annex C: Additional Details for the Power Calculations for Health Centers

The primary outcome at the facility level is the average quality score as reported in the L2 assessment report provided by URC. These data cover 8 provinces, 34 ODs and 511 facilities, of which 450 are health centers. Cambodia as a whole has 25 provinces and 91 ODs. We focus here on the health center scores.

We also treat this design as a cluster-randomized trial, but for a continuous outcome. We ignore the clustering at the OD and province level for the household survey, where we clustered only on the catchment area. However, facility performance may be correlated given the shared financial and management resources at the province and OD levels. Thus the additional assumptions for the power calculation for the facility outcome are:

- A cluster is defined as a province.
- Facilities are sampled from within a province.
- The standard deviation is the same for both groups.

Table B1 shows the mean, SD and ICC at the OD and province levels. The ICC at the province level is substantially lower than at the OD level. Table B2 shows the main results.

Based on these calculations and following the example from the household survey, **a design with 140 catchment areas spread across 23 provinces would have an effect size of 3.8 percentage points.** Table B3 shows the results using ODs as clusters; the effect size is about 1 percentage point higher for most estimates.

Table B1: Input parameters

	Overall quality score
Mean	0.349
SD	0.056
ICC OD	0.291
ICC province	0.134

Table B2: Results for quality score using provinces as clusters (0-100%, using continuous method)

ICC	SD	Control mean	Treatment mean	Effect size	N provinces per arm	N provinces total	N facilities per province	N facilities (total sample)
0.134	0.0564	0.349	0.393	0.044	10	20	4	80
0.134	0.0564	0.349	0.390	0.041	10	20	5	100
0.134	0.0564	0.349	0.388	0.039	10	20	6	120
0.134	0.0564	0.349	0.386	0.038	10	20	7	140
0.134	0.0564	0.349	0.385	0.037	10	20	8	160
0.134	0.0564	0.349	0.384	0.036	10	20	9	180
0.134	0.0564	0.349	0.384	0.035	10	20	10	200

Table B3: Results for quality score using ODs as clusters (0-100%, using continuous method)

ICC	SD	Control mean	Treatment mean	Effect size	N provinces per arm	N provinces total	N facilities per province	N facilities (total sample)
0.291	0.0564	0.349	0.400	0.051	10	20	4	80
0.291	0.0564	0.349	0.398	0.049	10	20	5	100
0.291	0.0564	0.349	0.396	0.048	10	20	6	120
0.291	0.0564	0.349	0.395	0.047	10	20	7	140
0.291	0.0564	0.349	0.395	0.046	10	20	8	160
0.291	0.0564	0.349	0.394	0.045	10	20	9	180
0.291	0.0564	0.349	0.393	0.045	10	20	10	200

Annex D: List of Provinces, ODs, Health Facilities

Table C1: List of provinces and number of health facilities surveyed (N=140)

Province	Health Facilities
Banteay Meanchey	8
Battambang and Pailin	12
Kampong Cham	8
Kampong Chhnang	6
Kampong Speu	4
Kampong Thom	6
Kampot and Kep	6
Kandal	8
Kratie	4
Mondul Kiri	2
Phnom Penh	14
Prey Veng	12
Pursat	8
Ratanakiri	2
Siemreap	8
Sihanoukville	2
Stung Treng	2
Svay Rieng	8
Takeo	8
Oddar Meanchey	2
Tbong Khmum	10

Table C2: List of provinces, operational districts, and number of health facilities surveyed (N=140)

Province	Operational District	Health Facilities
Banteay Meanchey	Mongkol Borei	2
Banteay Meanchey	Poipet	2
Banteay Meanchey	Preah Net Preah	2
Banteay Meanchey	Thma Puok	2
Battambang and Pailin	Battambang	2
Battambang and Pailin	Maung Russei	2
Battambang and Pailin	Pailin	2
Battambang and Pailin	Sampov Luon	2
Battambang and Pailin	Sangkae	2
Battambang and Pailin	Thmar Koul	2
Kampong Cham	Batheay	2
Kampong Cham	Prey Chhor - Kang Meas	2
Kampong Cham	Srey Santhor - Kang Meas	2
Kampong Cham	Stueng Trang	2
Kampong Chhnang	Boribo	2
Kampong Chhnang	Kampong Chhnang	2
Kampong Chhnang	Kampong Tralach	2
Kampong Speu	Kampong Speu	2
Kampong Speu	Ou Dongk	2
Kampong Thom	Baray and Santuk	2
Kampong Thom	Kampong Thom	2
Kampong Thom	Stong	2

Kampot and Kep	Chhouk	2
Kampot and Kep	Kampot	2
Kampot and Kep	Kep	2
Kandal	Leuk Dek	2
Kandal	Muk Kam Poul	2
Kandal	Ponhea Leu	2
Kandal	Takhmao	2
Kratie	Chhlong	2
Kratie	Kratie	2
Mondul Kiri	Sen Monorom	2
Phnom Penh	Bassak	2
Phnom Penh	Chaktomouk	2
Phnom Penh	Dang Koa	2
Phnom Penh	Mekong	2
Phnom Penh	Por Senchey	2
Phnom Penh	Preaek Phnov	2
Phnom Penh	Sen Sok	2
Prey Veng	Kamchay Mear	2
Prey Veng	Krong Prey Veng	2
Prey Veng	Mesang	2
Prey Veng	Neak Loeung	2
Prey Veng	OD Baphnom	2
Prey Veng	Pearaing	2
Pursat	Bakan	2
Pursat	Krakor	2
Pursat	Kravanh	2
Pursat	Sampov Meas	2
Ratanakiri	Banlong	2
Siemreap	Ankor Chhum	2
Siemreap	Kralanh	2
Siemreap	Siem Reap	2
Siemreap	Sot Nikum	2
Sihanoukville	Preah Sihanouk	2
Stung Treng	Steung Treng	2
Svay Rieng	Chi Phu	2
Svay Rieng	Romeas Hek	2
Svay Rieng	Svay Rieng	2

Annex E: Data Collection Overview

Stratification and Sampling Process

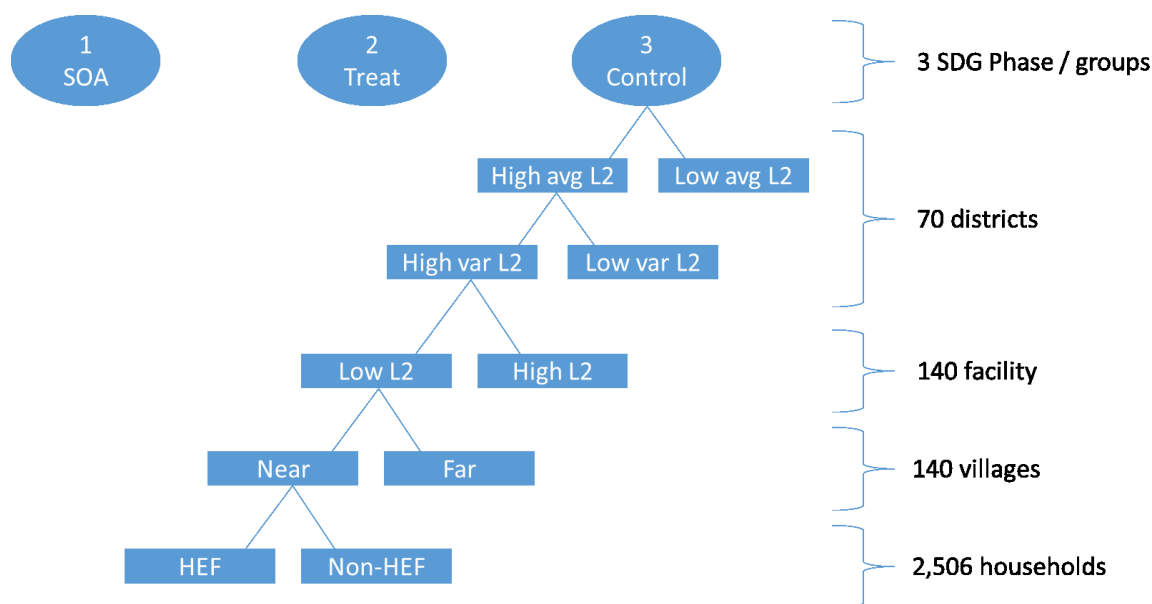
The following steps are nested, so that, for example, the villages are selected within the strata for OD facility (Figure D1).

1. Within a province, four strata of ODs were created:
 - District *average* of the facility score in the Level 2 quality assessment (L2) is above or below the median of the district L2 in the province.
 - District *standard deviation* of the facility L2 is above or below the median of the district L2 in the province.
2. Within each *province* and *strata*, ODs were randomly assigned to treatment and control status. For example, if there are 2 ODs in a province that are “high mean and low SD”, one district was randomly assigned to treatment and the other to control. If there are three ODs in this stratum, the third was randomly assigned to either

treatment or control. This could only be done where there are a lot of ODs, that is, in Phnom Penh and Kandal provinces.

3. For the remaining ODs, the randomization was done within strata but without accounting for province.
4. For the villages, two strata were created based on the distance from each facility. The villages are in the catchment areas of the facilities.
 - In each of the four OD strata, assign each OD to one of two groups:
 - For the OD of the first group
 - Randomly pick a “close” village in the stratum “HC below median L2”.
 - Randomly pick a “far” village in the stratum “HC above median L2”.
 - For the OD of the second group
 - Randomly pick a “close” village in the stratum “HC above median L2”.
 - Randomly pick a “far” village in the stratum “HC below median L2”.
 - Across the two ODs, there is balance: Four villages have been selected, two of which are “close” and one of which is in the catchment area of a “HC below median L2”.
5. Households were selected randomly, using a modified EPIWalk selection method. The goal was to interview 10 HEF (including PAC) households and 10 non-HEF households that meet the target criteria.
 - If, after screening all HHs in the village, there are not 10 eligible HEF member households and/or 10 eligible non-HEF member households in the village, the field team interviewed as many eligible respondents as were available in each category, up to the maximum number of 10 HH interviews in each group and with respect to the HH sampling strategy.
 - As a result, the total number of interviewed households could be less than the target of 20.
 - Any deficit in the total number of households in one village would be made up in the next village. That is, if there were only eight HEF households in a village, the team would interview 12 HEF households in the next village (instead of the target of 10).

Figure D1. Stratification Scheme used for the Baseline Survey



Sample Representativeness

The sampling was based on randomization at the OD level. Accordingly, the WB-IE team constructed sampling weights to represent their respective population of interest. The sampling weights were calculated with a standard weighting approach for addressing the unequal probabilities of selection, as the inverse of the overall probability of selection, by taking into account the multi-stage stratification design. This was required to be done so that the outcomes of all estimations were statistically representative for the total population.

Operational District

As there are two dimensions of stratification for OD which are based on facility L2 scores and variation of L2 score, the sample from the 70 ODs was randomly selected within strata (low vs. high average L2 interacted with low vs. high variability in L2). The team then constructed the sampling weights based on the probability of selection from the four strata clusters, where the selections are randomized at the provincial-level.

Note that there were two (among the total 25 provinces in the country) provinces that were not included in the sample based on similarity in selected characteristics. The design criteria for dropping these provinces are pre-decided treatment/control status (as applicable), median facility L2 score, contextual factors (for example, health infrastructure, population, geography), and distribution of the L2 score. Therefore, there were 23 provinces finally covered in the baseline survey, and the outcomes statistically represent evidence for the whole country.

Health Facility

Across the OD strata, the 140 facilities are allocated evenly and based on the facility quality scores. The sampling weights then associate the probability of OD selection within the OD strata and the probability of facility selection within the quality groups in the same OD strata at the second stage. The overall probability of selection of each facility in the sample is the product of these two probabilities.

Therefore, the calculation outputs are statistically representative for all facilities in Cambodia, given the constructed sampling weights.

Health Worker

Around four health workers were selected from each of the 140 health facilities. Their probability of selection is based on the total number of health workers within the facility. Thus, the probability of worker selection within facility and the overall probability facility selection altogether generate the overall probability for worker selection.

The sampling weights for each of the surveyed health workers is the inverse of the probability of worker selection, so that statistical outcomes are representative for health workers in facility population.

Exit Interview

A total of 1,061 patient exit interviews were surveyed with 1,053 completed. All of them are patients who received ANC and services for a child under 5. Their sampling weights are the facility sampling weights multiplied with inversed probability of selection from the total patients in the last calendar month, with exit interview non-response or incompleteness adjustment.

The inverse of adjusted probability of selection provides the exit interview outcomes that are statistically representative for all facilities in Cambodia.

Community

The sample covers 140 villages with two villages selected for each of 70 ODs. By design setting, there are two village strata based on distance (split at median distance of villages in catchment area to the nearest facility). Therefore, the distance stratification of each village from their OD is considered in the weight construction. In particular, the probability of village selection is the product of probability of OD selection from the four OD strata clusters and the probability of village selection based on distance to the facility within the same OD. The overall probability for village selection is the product of the two probabilities.

Therefore, given the inversed overall probability, the sampling weights for community calculation could be nationally representative.

Household

The household stratification is designed as HEF and non-HEF. HEF is classified from having at least a household member that has HEF coverage. Therefore, all household members in an HEF household are also protected under the HEF program (Box D1).

The probability of selection within the HEF and non-HEF strata within the same village is considered. By design, within each target village, a total of 20 households will be selected and evenly divided between the two sample groups of HEF and non-HEF households.

In practice, the numbers of surveyed households varied by village. Different cases for the unequal probability of household selection within the household strata in the village are considered.

- Both the number of HEF and non-HEF interviews are below the target of 10
- Both the number of HEF and non-HEF interviews at the target of 10
- The target sample size of 10 is reached for just one group but not the other
- The target sample size is over 10

In each case, the inverse probability of selection over numbers of eligible HEF and non-HEF households within the same village is applied. Then this household probability of being selected is multiplied with another probability of village selection to have the overall probability for household selection. Therefore, sampling weights for each household may be constructed to make the calculated outcomes to be representative at the national level.

However, it is important to realize that the household eligibility criteria are such that the household must have at least have one member who is a woman 15-49 years old that has had at least one pregnancy event (live birth, stillbirth, miscarriage and/or abortion) in the 24 months directly preceding the survey.

So when the results are compared with national surveys such as CSES, DHS, and some others, it is necessary to limit the sample from the other surveys to include only the eligible households that have mother and, born or unborn, baby below two years.

Box D1 Screening and Classification for HEF and Non-HEF Households

A household (HH) is defined for this survey as:

- A privately owned or rented dwelling (for example, house, apartment building, etc.), including ones where someone is living without the owner's consent, or;
- Private dwellings on public land or connected with institutions (for example, a caretaker's house inside a hospital; impoverished families that live in wats but are not dependent on the pagoda for care, etc.).
- **Excluded:** Non-private dwellings, such as prisons, hospital beds, school dormitories, monasteries, etc.

HH members are defined as those individuals that: (i) combine money for expenses; and (ii) share at least one meal/day in at least six months in the last 12 months before the survey interview. For a month to be eligible for a HH member, that HH member should have eaten at least one meal/day for 16 or more days in the month (that is, 50 percent of days in the month). The following are also considered as HH members, although they do not fit the above definition:

- New spouses that have married in the last six months and recently moved into the household;
- New babies born in the last six months;

HH members may also live in different locations, as long as they share expenses and meals, for example a widowed grandmother who sleeps in her own house, but eats meals with and takes care of her son's family in their house.

Multiple HHs may be in the same dwelling/land, even if they are family members (for example, two brothers, their wives and their children may live in the same house or on the same land, but if they do not share expenses and eat together, they will be counted as two separate households).

Eligible households are households located in the target villages previously selected, that have the following characteristics:

- At least one HH member is a woman 15-49 years old who has had at least one pregnancy event (live birth, stillbirth, miscarriage and/or abortion) in the 24 months directly preceding the survey.

In addition, the eligible HHs within each village will be divided into two groups:

- **Current HEF members and recent PAC members.** This includes (i) HHs where at least one HH member possesses an unexpired HEF card; and/or, (ii) HHs where at least one eligible HH member has a PAC (PostID) card that expired after September 2015.
- **Non-HEF members.** These include HHs that are not affiliated with any social health protection scheme, as well as: previous PAC members (whose cards expired before September 2015); members of community-based health insurance (CBHI) or other insurance schemes; and previous HEF members (for example, those with expired HEF cards).

Within each target village, a total of 20 households will be selected using these criteria. These HHs will be evenly divided between the two sample groups; 10 HEF member HHs and 10 non-HEF HHs.

HEF Classification:

HEF is classified from having at least a household member that has HEF. Therefore, all household members in an HEF household are under HEF. On the other hand, in cases where none of the members in a given household are covered by HEF, the household is classified as non-HEF.

Survey Instruments

The key sections for each survey instrument are listed below:

Operational District

- Authority and autonomy
- Financial planning and budgeting
- Contribution to capacity building activities for in-service and pre-service training

- Planning and management of service provision
- Staff overview and roster
- Health Management Information System (HMIS) and General Reporting
- General Health Management Information System (HMIS)
- Drug Storage and Availability
- Drug and Vaccine Storage and Availability
- Autonomy, incentives and motivation

Health Center

- General
- Administration
- Human resources
- Staff roster
- Laboratory
- Services
- General / HMIS
- Utilization / HMIS
- User fees
- Autonomy
- Direct observation of facility, equipment and drug supply
- Information about the catchment area
- Incentives and motivation

Exit interview

- Treatment antenatal care
- Treatment for children under 5
- Time and expense
- Patient satisfaction
- Household
- Traditional birth attendants

Health Worker

- Training
- Hours worked
- Salary and other compensation
- Supervision
- Views on incentives and management, as well as patient motivations
- Supplemental income
- Wellbeing
- Satisfaction
- Personal drive
- Protocol based vignette

Medical Records Review

- ANC register completeness
- Referral slip completeness

Community

- Direct observations of the community
- Composition and demography
- Access to basic services and community characteristics
- Social capital and empowerment
- Economic activities
- External shocks

- Community programs
- Local prices

Household

- Roster
- Education
- Labor
- Housing
- Assets
- Other sources of income
- Food consumption
- Non-food expenditures
- HEF utilization and knowledge [for HEF households only]
- Health status and utilization
- Mortality

Quality Assurance

To ensure the reliability of data collected, the Quality Assurance (QA) team of the World Bank conducted spot checks and re-interviews throughout the field data collection process conducted by the survey firm. This ensured that the QA effort was over and above the quality control efforts internally instituted by the survey firm itself. Comprising nine members, the QA team conducted spot checks across one half of the entire fieldwork and conducted re-interviews of about 10 percent of the total interviews conducted by the survey firm. About 10 to 15 questions with five random versions of tools were selected from the original tools used by the survey firm. The questions selected for re-interviews were close-end questions and more structured, as this would allow a better comparison with the original data.

Annex F: Operational District Survey Questionnaire

1. Introductory information			
1.01	What is your name?		
1.02	What is your official position at this OD?	OD Director	1
		OD Deputy Director	2
		Administrative Staff	3
		Financial Staff	4
		Other (specify)	88
1.03	How long have you been working in this position at this OD? ROUND TO THE NEAREST YEAR.	Years:	
1.04	Did you previously work in the public medical sector? E.G., DOCTOR IN HEALTH CENTER, OD STAFF, ETC.	Yes	1
		No (skip to Q1.10)	0
1.05	What was your previous position?	OD Deputy Director	1
		Administrative Staff	2
		Financial Staff	3
		Chief medical officer	4
		Head Nurse	5
		Head / Deputy Head of Technical Department	6
		Health facility administrator/ director	7
		Health facilitydeputy director	8
		Doctor or medical officer	9
		Nurse	10
		Midwife	11
		Pharmacist	12
		Lab technician	13
Other medicalstaff (specify)	77		
Other non-medical staff (specify)	88		
1.10	How many health facilities is this OD responsible for? WRITE NUMBER OF EACH FACILITY. CODE 00 IF NOT AVAILABLE IN THIS OD.	a. Former district hospital:	
		b. Health center:	
		c. Health post:	
		d. Other (specify):	

2. Authority and Autonomy

Now, we would like to know about the decision-making processes and the authority that the OD holds.

2.01	Who has the authority to make the following decisions? ONE ANSWER EACH. CODES: 1. MOH 2. PHD 3. OD	a.	Procurement of drugs	
		b.	Procurement of medical equipment	
		c.	Health facility maintenance	

4. Health facility 5. Donor 6. NGO partner 7. HEF Operator 88. Other (specify) 99. Don't know	d.	Equipment and vehicle maintenance	
	e.	Annual OD budget	
	f.	Annual facility budget	
	g.	Distribution of AOP funds	
	h.	Distribution of user fees	
	i.	Distribution of HEF reimbursements	
	j.	Distribution of SDGs	
	k.	Distribution of donor funds	
	l.	Distribution of NGO funds	
	m.	Expenditures of AOP funds	
	n.	Expenditures of user fees	
	o.	Expenditures of HEF reimbursements	
	p.	Expenditures of SDGs	
	q.	Expenditures of donor funds	
r.	Expenditures of NGO funds		
s.	Disburse performance bonuses to facilities		
t.	Disburse performance bonuses to specific staff at facilities		

3. Financial planning and budgeting

3.01	Was an annual budget prepared and due allocation to services and activities made within the OD for the 2015 fiscal year?	Yes	1
		No	2
3.02	For fiscal year 2015, did the OD monitor district health expenditures against the agreed budget?	Yes	1
		No	2
3.03	In fiscal year 2015, what was the total funding for this OD?	KHR:	
3.04	What was the funding received from each of these sources in fiscal year 2015 (in KHR)? PROMPT.IF NO FUNDING FROM THIS SOURCE, CODE "0".		
	MEF (National budget)	KHR:	
	User fees	KHR:	
	HEF reimbursements	KHR:	
	Service delivery grants	KHR:	
	Donor (specify)	KHR:	
	NGO	KHR:	
	Health insurance	KHR:	
	Midwife incentives	KHR:	
	Other (specify)	KHR:	

3.05	Was the OD free to choose how it spent all or some of this money in fiscal year 2015 ?	Yes, all	1
		Yes, some	2
		No (skip to Q3.08)	0
3.06	Which funding sources was the OD able to decide how it spent? MULTIPLE RESPONSE. CIRCLE ALL THAT APPLY. CHECK WITH Q3.04.		
	MEF (National Budget)	1	
	User fees	2	
	HEF reimbursements	3	
	Service delivery grants	4	
	Donor (specify)	5	
	NGO	6	
	Health insurance	7	
	Midwife incentives	8	
	Other (specify)	88	
3.07	Which funding sources was the OD able to use for incentives? MULTIPLE RESPONSE. CIRCLE ALL THAT APPLY. CHECK WITH Q3.04.		
	None.	0	
	MEF (National Budget)	1	
	User fees	2	
	HEF reimbursements	3	
	Service delivery grants (SDGS)	4	
	Donor (specify)	5	
	NGO	6	
	Health insurance	7	
	Midwife incentives	8	
Other (specify)	88		
3.08	How much money was spent on the following items during the 2015 fiscal year (in KHR)? IF NO MONEY SPENT ON THAT CATEGORY, CODE "0".		
	a. Incentives to OD staff	KHR:	
	b. Incentives to Health Facility staff	KHR:	
	c. Wages for staff recruited by OD	KHR:	
	d. Wages for staff recruited by Facility	KHR:	
	e. Drugs	KHR:	
	f. Other medical expenses	KHR:	
	g. Fuel and other non-medical expenses	KHR:	

	h. Emergency medical transport	KHR:	
	i. Staff transport	KHR:	
	j. Purchase of all types of equipment and other capital	KHR:	
	k. Infrastructure and repairs	KHR:	
	l. Treasury	KHR:	
	m. Facility management	KHR:	
	n. Other (specify)	KHR:	
3.09	In fiscal year 2015, how did the facilities in this OD spend money raised from user fees? AS PERCENTAGE OF ALL USER FEES RECEIVED THAT YEAR.		
	a. Incentives to facility staff	Percent (%)	
	b. Wages for staff recruited by OD	Percent (%)	
	c. Wages for staff recruited by Facility	Percent (%)	
	d. Drugs	Percent (%)	
	e. Other medical expenses	Percent (%)	
	f. Fuel and other non-medical expenses	Percent (%)	
	g. Emergency medical transport	Percent (%)	
	h. Staff transport	Percent (%)	
	i. Purchase of all types of equipment and other capital	Percent (%)	
	j. Infrastructure and repairs	Percent (%)	
	k. Treasury	Percent (%)	
	l. Facility management	Percent (%)	
	m. Other (specify)	Percent (%)	
3.10	In fiscal year 2015, was this OD a Special Operating Agency (SOA)?	Yes	1
		No (skip to Q3.11A)	2
1.07	When did this OD initially become an SOA?	Year:	
3.11	In fiscal year 2015, how did the OD allow facilities to spend money from SOAs? AS PERCENTAGE OF ALL SDG MONEY RECEIVED THAT YEAR. Note: not applicable for non-SOA facility.		
	a. Incentives to staff	Percent (%)	
	b. Wages for staff recruited by OD	Percent (%)	
	c. Wages for staff recruited by Facility	Percent (%)	
	d. Drugs	Percent (%)	
	e. Other medical expenses	Percent (%)	
	f. Fuel and other non-medical expenses	Percent (%)	
	g. Emergency medical transport	Percent (%)	

	h. Staff transport	Percent (%)	
	i. Purchase of all types of equipment and other capital	Percent (%)	
	j. Infrastructure and repairs	Percent (%)	
	k. Treasury	Percent (%)	
	l. Facility management	Percent (%)	
	m. Other (specify)	Percent (%)	
3.11A	In fiscal year 2015, how did the OD allow facilities to spend money from MEF (National Budget)? AS PERCENTAGE OF ALL MEF MONEY RECEIVED THAT YEAR.		
	a. Incentives to staff	Percent (%)	
	b. Wages for staff recruited by OD	Percent (%)	
	c. Wages for staff recruited by Facility	Percent (%)	
	d. Drugs	Percent (%)	
	e. Other medical expenses	Percent (%)	
	f. Fuel and other non-medical expenses	Percent (%)	
	g. Emergency medical transport	Percent (%)	
	h. Staff transport	Percent (%)	
	i. Purchase of all types of equipment and other capital	Percent (%)	
	j. Infrastructure and repairs	Percent (%)	
	k. Treasury	Percent (%)	
	l. Facility management	Percent (%)	
	m. Other (specify)	Percent (%)	
3.12	In fiscal year 2015, was this OD contracted with a Health Equity Fund (HEF)?	Yes	1
		No (skip to Q3.14)	2
1.09	When did this OD initially contract with HEF?	Year:	
3.13	In fiscal year 2015, how did the OD allow facilities to spend money from HEF reimbursements? AS PERCENTAGE OF ALL HEF MONEY RECEIVED THAT YEAR. Note: not applicable for non-HEF ODs. Check eligibility with Q1.08.	Percent (%)	
	a. Incentives to staff	Percent (%)	
	b. Wages for staff recruited by OD	Percent (%)	
	c. Wages for staff recruited by Facility	Percent (%)	
	d. Drugs	Percent (%)	
	e. Other medical expenses	Percent (%)	
	f. Fuel and other non-medical expenses	Percent (%)	
	g. Emergency medical transport	Percent (%)	

	h. Staff transport	Percent (%)	
	i. Purchase of all types of equipment and other capital	Percent (%)	
	j. Infrastructure and repairs	Percent (%)	
	k. Treasury	Percent (%)	
	l. Facility management	Percent (%)	
	m. Other (specify)	Percent (%)	
3.14	In fiscal year 2015, how much of the Program Based Budget (PBB) did the OD spend on facility maintenance?	Percent (%)	
3.15	Was an annual budget prepared and due allocation to services and activities made within the OD for this 2016 fiscal year?	Yes	1
		No	2
3.16	Which of these sources has provided funding in fiscal year 2016?		
	PROMPT. MULTI-RESPONSE. SELECT ALL THAT APPLY.		
	MEF (National budget)		1
	User fees		2
	HEF reimbursements		3
	Service delivery grants		4
	Donor (specify)		5
	NGO		6
	Health insurance		7
	Midwife incentives		8
Other (specify)		88	
3.17	So far in fiscal year 2016 (months – to --), have the funds from each of these sources arrived on time or late? Please let us know for each funding source listed in 1.10 if these funds have arrived: 1. Always on time 2. Usually on time 3. Sometimes on time, sometimes late 4. Usually late 5. Always late? PROMPT. ONLY ASK FOR EACH SELECTED CODE IN 3.16		
	a. MEF (National budget)		
	b. User fees		
	c. HEF reimbursements		
	d. Service delivery grants		
	e. Donor (specify)		
	f. NGO		
	g. Health insurance		
	h. Midwife incentives		

	i. Other (specify)		
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4. Contribution to capacity building activities for in-service and pre-service training

4.01	<p>In fiscal year 2015, did the OD conduct any of the following activities with either OD staff or health facility staff, or both?</p> <p>0 – Not conducted 1 – Conducted with both OD staff and health center staff 2 – Conducted with OD staff only 3 – Conducted with health center staff only</p>	In fiscal year 2015, did the OD...	
		a. Assess the training needs for staff?	
		b. Organize in-service training / on the job training?	
		c. Help with staff career planning?	
		d. Plan for training or other capacity improvement activities to be conducted in 2016?	
4.02	<p>In fiscal year 2015, did the OD conduct any quarterly, semi-annual and/or annual performance reviews with participation from health centers?</p> <p>MULTI-RESPONSE. PROMPT.</p>	Quarterly performance reviews	1
		Semi-annual performance reviews	2
		Annual performance review	3
		No performance reviews	4
4.03	<p>In fiscal year 2015, did the OD provide technical assistance to health centers to improve their performance?</p>	Yes	1
		No (skip to Q4.05)	2
4.04	<p>In what areas did the OD provide technical assistance?</p> <p>MULTI-RESPONSE. PROMPT.</p>	Quality of care	1
		Facility infrastructure	2
		Service delivery	3
		Technical advice	4
		Managerial advice	5
		Vaccination Support	6
		Women and Children Support	7
		Other (specify)	88
4.05	<p>In fiscal year 2015, did the OD develop any job descriptions for any health facility staff?</p>	Yes	1
		No	2
4.06	<p>In fiscal year 2015, did the OD assess the performance of any health center staff in its district?</p>	Yes	1
		No	2
4.07	<p>In fiscal year 2015, did the OD set and award financial & non-financial incentives for district health staff?</p>	Yes, both	1
		Yes, financial	2
		Yes, non-financial	3
		No (skip to Q4.09)	4
4.08	<p>How were these incentives determined?</p>	Staff satisfaction scores	1

	MULTIPLE RESPONSE.	Facility performance reviews	2
		L2 assessments	3
		Self Assessment of quality	4
		Other (specify)	88
4.09	In the last six months (January – June 2016), has the OD conducted any of the following activities? INTERVIEWER PROMPT. CIRCLE ALL THAT APPLY.	Provided on-site mentoring to other staff	1
		Provided off-site or remote support to other staff (via telephone or email)	2
		Identified opportunities and needs for formal education of other staff	3
		Monitored coverage on mandatory trainings and arranged trainings	4
		None of the above	0
4.10	In the last six months, did the OD conduct any other activities to improve professional development and management in the District?	Yes	1
		No (skip to Q5.01)	0
4.11	What other activities did the OD conduct?	OPEN-ENDED:	

5. Planning and management of service provision

5.01	Has an OD workplan been developed for the 2016 financial year?	Yes	1
		No (skip to 5.05)	2
5.02	Who was involved in developing this workplan? MULTIPLE RESPONSE.	MOH staff	1
		OD director	2
		OD staff	3
		Hospital director/deputy director	4
		HC directors/deputy directors	5
		Hospital/HC executive committee	6
		Commune chief/council	7
		Village chiefs	8
		Community members	9
		VHSG	10
		Other (specify)	88
5.03	Are priority health-related activities identified in this workplan for the current financial year?	Yes	1
		No (skip to Q5.05)	2

5.04	Which services are priorities for the current financial year ? I will read you a list of services; please tell me if this service is a priority for the current fiscal year . PROMPT ALL ANSWER CODES. MULTIPLE RESPONSE.	Prenatal care	1
		Institutional delivery	2
		Postnatal care	3
		Immunization	4
		Curative consultations	5
		Family planning/Reproductive health	6
		Nutrition	7
		Integrated management of childhood illness (IMCI)	8
		Malaria	9
		Tuberculosis	10
		HIV/AIDS	11
		Health promotion and monitoring	12
		Other (specify)	88
5.05	In the 2015 fiscal year , did the OD make arrangements for the planning and procurement of equipment for the health centers in this district?	Yes	1
		No	2
5.06	In the 2015 fiscal year , did the OD take actions for health center maintenance ?	Yes	1
		No	2
5.07	In the 2015 fiscal year , was the OD in charge of health center equipment and vehicle maintenance ?	Yes	1
		No	2
5.08	For this fiscal year , did the OD develop any strategic (medium-term) planning & priorities for the district?	Yes	1
		No	2
5.09	For this fiscal year , did the OD develop any financial forecasting for the district?	Yes	1
		No	2
5.10	For this fiscal year , did the OD develop any operational (annual and quarterly) planning for the district?	Yes	1
		No	2
5.11	Who conducts monitoring and evaluation (M&E) activities at the health center level? MULTIPLE ANSWER.	MOH	1
		PHD	2
		OD	3

		Health facility (internal)	4
		Donor	5
		NGO partner	6
		HEF operator	7
		Evaluation Steering Committee	8
		Don't know (skip to Q5.13)	99
		Other (specify)	88
5.12	<p>How often are M&E activities conducted by each of these entities?</p> <p>ANSWER FOR EACH RESPONSE IN Q5.11 ABOVE. CODES:</p> <ol style="list-style-type: none"> 1. Less than once per year 2. Yearly 3. Biannually 4. Quarterly 5. Monthly 6. More than once per month 7. Project-based 99. Don't know 88. Other (specify) 	MOH	1
		PHD	2
		OD	3
		Health facility (internal)	4
		Donor	5
		NGO partner	6
		HEF operator	7
		Evaluation Steering Committee	
		Other (specify)	88
5.13	In the last year , has the OD disseminated any relevant analysis on health data and best practices to health centres in the district?	Yes	1
		No	2
5.14	<p>In the last six months (February – July 2016), has the OD conducted any of the following activities with any health facilities, all health facilities, or not at all?</p> <p>READ THE ANSWERS. FOR EACH, CODE: 0 – Not conducted 1 – Conducted with some facilities 2 – Conducted with all facilities</p>	In the last 6 months, did the OD...	
		a. Review maternity, newborn and child care clinical records and registers?	
		b. Examine whether facilities had enough skilled health staff (doctors, nurses, etc.)?	
		c. Promote improved patient transport system?	
		d. Promote use of early warning charts to prompt referrals to referral hospitals?	

6. OD Staff			
6.01	Who has the authority to hire new OD staff?	OD Director	1
	MULTIPLE RESPONSE. RECORD ALL THAT APPLY.	OD Deputy Director	2
		Provincial health department (PHD)	3
		Ministry of Health	4
		Donor	5
		Other (specify)	88

6.02	Who has the authority to dismiss OD staff? MULTIPLE RESPONSE. RECORD ALL THAT APPLY.	OD Director	1
		OD Deputy Director	2
		Provincial health department (PHD)	3
		Ministry of Health	4
		Donor	5
		Other (specify)	88
6.03	Who has the authority to determine OD staff compensation? MULTIPLE RESPONSE. RECORD ALL THAT APPLY.	OD Director	1
		OD Deputy Director	2
		Provincial health department (PHD)	3
		Ministry of Health	4
		Donor	5
		Other (specify)	88
6.04	Is there an HR training plan for all full-time OD office staff?	Yes	1
		No	2
6.05	How many staff are currently employed to work in this OD office? INCLUDE ALL STAFF: PERMANENT AND TEMPORARY, MEDICAL AND NON-MEDICAL STAFF, PROJECT-BASED CONSULTANTS, AS WELL AS THE RESPONDENT.	Persons:	
6.06	In the last year, how many staff began working at the OD office? INCLUDE ALL NEW HIRES: PERMANENT, PART-TIME, CONSULTANTS, ETC.	Persons:	
		Don't know / Not available	-99
6.07	In the last year, how many staff stopped working at the OD office? INCLUDE ALL REASONS: RETIREMENT, RESIGNATION, TERMINATION, END OF CONTRACT, ETC.	Persons:	
		Don't know / Not available (skip to Q7.01)	-99
6.08	What were the THREE most common reasons for staff to stop working at the OD office in the last year? DO NOT PROMPT. MULTI-RESPONSE. RECORD UP TO THREE ANSWERS.	Retirement	1
		Resignation (unknown reason)	2
		Termination	3
		End of contract	4
		Work in private medical sector	5
		Work other business (non-medical)	6
		Other (specify)	7
		Other (specify)	8

		Other (specify)	9
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7. Core Staff Roster

Please identify all "core staff" that currently work in this OD office, including:

- OD Director
- Deputy Directors (one or more)
- Chief Finance Officer (highest ranking person in charge of finance)
- Chief Medical Officer (highest ranking person in charge of medical affairs)

, starting with the OD Director.

No	7.01	7.02	7.03	7.04	7.05	7.06	7.07	7.08	7.09	7.10
	Staff name	MOH ID code	Sex	Age	What is the highest education level this person achieved?	What is their position in this District Office?	What is their contractual status?	What is this person's employment level?	How many years have they been working at their current position? IF LESS THAN ONE YEAR, CODE "0".	What is their regular monthly salary, according to the contract or other agreement?
		Not available - 98 Don't know - 99	Male - 1 Female - 2		Primary (grade 6)- 1 Secondary (g. 12)- 2 Undergraduate degree (Assoc., Bachelors)- 3 Masters degree - 4 PhD - 5 MD - 6 Technical certification (nurse, midwife, etc.) - 7 Other (specify) - 88	OD Director - 1 OD Deputy Director - 2 Chief Finance Officer - 3 Chief Medical Officer - 4 Other (specify) - 88	Full-time - 1 Part-time - 2 Consultant - 3 Other (specify) - 88	Grade:	Number Years:	KHR:
1										
2										

No.	7.11	7.12	7.13	7.14	7.15	7.16	7.17
	Besides regular salary, does this person receive other financial incentives for their work in this OD?	Where do these incentives come from?	How much did this person make in incentives last month?	How many hours per week is this person expected to work under their contract?	Is this person in the office today?	Why is this person not in the office today?	Has this person received any in-service training in the last 6 months?
	Yes - 1 No - 0 (skip to Q7.14)	Multi-RESPONSE. User fees - 1 HEF reimbursements - 2 SDGs - 3 Donor - 4 NGO - 5 National budget - 6 Health insurance - 7 Midwifery	KHR:	Hours:	Yes - 1 (skip to Q7.17) No - 0	Not scheduled for work today - 1 Authorized leave (annual, sick, maternity, etc.) - 2 Off-site training/meeting - 3 Field visit / Outreach - 4 Late - 5 Unauthorized leave - 6 Other (specify) - 88	Yes - 1 No - 0

		scheme – 8 Other (specify) – 88					
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							

8. Group Roster					
For all remaining OD staff, please tell us the following information for each group of staff members:					
No		8.01	8.02	8.03	8.04
	Core Groups:	How many staff are currently employed in this OD office as %ROSTERTITLE%?	Besides regular salary, do staff in %ROSTERTITLE% receive other financial incentives for their work in this OD?	Where do these incentives come from? MULTI-RESPONSE.	In the last 6 months, have staff in %ROSTERTITLE% received any in-service training?
		RECORD NUMBERS OF STAFF IN EACH GROUP, EXCLUDING ANY STAFF MENTIONED IN 4A ROSTER ABOVE. IF NOT AVAILABE IN THIS OD, CODE “-97” AND SKIP TO NEXT LINE.	No – 0 (skip to 8.04) Yes, some staff in this group – 1 Yes, all staff in this group – 2	User fees – 1 HEFreimbursements – 2 SDGs – 3 Donor – 4 NGO – 5 National budget – 6 Health insurance – 7 Midwifery scheme – 8 Other (specify) – 88	No – 0 Yes, some staff in this group – 1 Yes, all staff in this group – 2
		NUMBER:			
1	Heads and deputy heads of technical departments				
2	Administrative staff				
3	Financial staff				
4	Other Medical staff (full or part-time)				
5	Other Non-medical staff (full or part-time)				
6	Other Medical staff (consultants)				
7	Other non-medical staff (consultants)				
8	Other staff, not listed:				

9. Health Management Information System (HMIS) and General Reporting			
9.01	Does the OD work with facilities to ensure the completeness and review of HMIS reports?	Yes	1
		No (skip to Q9.04)	2

9.02	Which HMIS reports does the OD assist with? MULTIPLE RESPONSE.	HC1 Report	1
		Drug report	2
		Financial report	3
		Programme reports	4
		Other (specify)	88
9.03	What services does the OD provide to assist with completion and submission of HMIS reports? INTERVIEWER: PROMPT. MULTIPLE RESPONSE.	Ensure the availability of reporting forms	1
		Ensure the timeliness of reports submitted	2
		Check completion of reports	3
		Check the accuracy of reports	4
		Correct inconsistencies in the reports	5
		Other (specify)	88
9.04	In addition to the reports above, which of the following does the OD office have to provide reporting to? MULTI RESPONSE.	Ministry	1
		PHD	2
		HEF Operator	3
		Donor	4
		NGO (please specify)	5
		Other (Specify)	96
9.05	How many hours per week do all OD staff usually spend reporting to each of these sources? HOURS. SHOW ONLY THOSE SELECTED IN 9.04. SUM TIMES FOR ALL STAFF THAT REPORT FOR EACH SELECTION.		
		a. Ministry	HOURS:
		b. PHD	HOURS:
		c. HEFO	HOURS:
		d. Donor	HOURS:
		e. NGO (please specify)	HOURS:
		f. Other (Specify)	HOURS:
9.06	Sometimes, reports can be submitted late for a number of reasons. How often does this office submit its reports late?	All the time	1

		Sometimes	2
		Not very often	3
		Never	4

10. General Health Management Information System (HMIS)			
10.01	Do you have an estimate of the size of the catchment population that this operational health district serves; that is, the total population living in the villages served by the facilities in this OD?	Yes	1
		No (skip to Q10.04)	0
10.02	How was this estimate calculated?	Received from MOH	1
		Received from donor/NGO	2
		Compiled from commune/village data	3
		Calculated from census/other national data	4
		Other (specify)	88
		Don't know	99
10.03	How many people are in the catchment area of this OD?	People:	
		Don't know	-99
10.04	Is there a register that shows the total number of patients attending all facilities in this OD?	Yes	1
		No(SKIP TO Q10.08)	0
10.05	What is the most recent completed month for which all patient records are available?	Year:	
		Month:	
10.06	What is the most recent completed month for which some patient records are available? USE THE MOST RECENT COMPLETED MONTH FOR EACH OF THE FOLLOWING RECORDS TO ANSWER THE INFORMATION BELOW.	Year:	
		Month:	
10.07	The last available month , how many total patients visited facilities in this OD, for both inpatient and outpatient treatments?	Inpatient:	
		Outpatient:	
		Not recorded/not available	-99
10.08	Does this OD compile information about the number of patients using each health service at all facilities?	Yes	1
		No (skip to Q11.01)	0
		Don't know (skip to Q11.01)	99
10.09	What is the most recent calendar month for which this information is available?	Year:	
		Month:	

11. Drug Storage and Availability			
11.01	Did the OD develop a strategy to use user fees to pay for the procurement of drugs, in the case of emergencies or stock-outs? VERIFY THAT STRATEGY IS PAYING FOR DRUGS VIA USER FEES, NOT THROUGH CENTRAL MEDICAL STORE OR MINISTRY OF HEALTH.	Yes	1
		No	2
11.02	Does the OD inspect and report on drug storage conditions in district facilities?	Yes	1
		No (skip to Q11.04)	2
11.03	When was the last time the OD inspected drug storage conditions in a district health center?	Month:	
		Year:	
11.04	Does the OD office have a supply of drugs?	Yes	1
		No (skip to Q11.06)	0
11.05	How long is this drug supply intended to last (assuming normal consumption rates from facilities)? IF LESS THAN 1 MONTH, CODE "0".	Months:	
		Don't know	97
11.06	Does the OD office have a supply of vaccines?	Yes	1
		No (skip to Q12.01)	0
11.07	How long is this vaccine supply intended to last (assuming normal consumption rates from facilities)? IF LESS THAN 1 MONTH, CODE "0".	Months:	
		Don't know	97

12. Drug and Vaccine Storage and Availability.					
Please record the information about the drugs and vaccines currently available in this OD, for the list below.					
		12.01	12.02	12.03	12.04
No.		Is this drug currently in stock at this facility?	Does the OD have enough drugs to last for the next 30 days (at normal usage rates)?	Was this item out of stock at anytime at this office in the last 30 days?	In the past 30 days, how many days has the item been out of stock?
		Yes – 1 No – 0 (skip to Q12.04)	Yes – 1 No – 0 Don't know – 99	Yes – 1 No – 0 (SKIP TO NEXT LINE)	CODE DAYS1-31. CODE 99 FOR "DON'T

				KNOW".
General drugs				
a.	Tetracycline ophthalmic ointment			
b.	Paracetamol (Panadol) tabs			
c.	Amoxicillin (tabs or capsule)			
d.	Amoxicillin (syrup)			
e.	Oral Rehydration Solution (ORS) packets			
f.	Iron tabs (with or without folic acid)			
g.	Folic acid tabs			
h.	Other antibiotics besides Amoxicillin			
i.	Vitamin A			
j.	Mebendazole			
Family planning				
k.	Condoms (male or female)			
l.	Oral contraceptive tablets			
m.	Depot Medroxyprogesterone Acetate (DMPA)			
n.	Contraceptive Implant			
o.	Intrauterine Device (IUD)			
Malaria				
p.	Chloroquine			
q.	Quinine			
r.	Fansidar / Sulphadoxine-Pyrimethamine (SP)			
s.	Artemisinin-Based Combination Therapy ACT (Fansidar + Artesunate) / Coartem			
Emergency Obstetric Care				
t.	Magnesium Sulfate			
u.	Diazepam Injection			
v.	Misoprostol			
w.	Oxytocin			
Vaccines				
x.	BacilleCalmette-Guérin (BCG)			
y.	Oral Polio Vaccine (OPV)			
z.	Tetanus Toxoid (TT)			
aa.	Dyphtheria Tetanus Pertussis (DTP)			
bb.	Hepatitis B Vaccine (HBV) Tetravalent			
cc.	Measles vaccine			
dd.	Pentavalent (DPT, Hepatitis B, Hemophilusinfluenzae B)			
Diagnostic kits				
ee.	Malaria rapid diagnostic kit			
ff.	HIV test kit			
gg.	Pregnancy testing kit			
hh.	Rapid plasma reagent (RPR) test for syphilis			
ii.	Urine protein & glucose testing kit (dipstick test)			

13. Autonomy		
<p>In this part of the questionnaire I would like to ask you some questions regarding how work is organized and decisions are made in this OD. All answers are confidential. I am now going to read you a series of statements about decision-making and authority in this facility. Please tell me if you agree with the following statements, using a scale from 1 to 5 where:</p> <p>1 is strongly agree; 2 is agree; 3 is neither agree nor disagree; 4 is disagree; 5 is strongly disagree.</p>		
13.01	I am able to allocate my OD budget according to how it is needed. There is enough flexibility in my budget.	
13.02	I am able to assign tasks and activities to staff as needed to achieve the outcomes I want in the OD. There is enough flexibility to use staff to address needs.	
13.03	The Provincial Health Department (PHD) supports my decisions and actions for doing a better job in my OD.	
13.04	I have choice over who I allocate for what tasks.	
13.05	I have choice over what services are provided in the facilities in this OD.	
13.06	I have enough authority to obtain the resources I need (drugs, supplies, funding) to meet the needs of the facilities in this OD.	
13.07	The policies and procedures for doing things are clear to me.	
13.08	The policies and procedures for doing things are useful tools for the challenges I face in providing services and reporting on activities.	
13.09	The PHD provides adequate feedback to me about my job and the performance of my OD.	

14. Incentives and Motivations														
RESPONDENT: HEAD OF THE OD OR BEST INFORMED STAFF MEMBER.														
14.01	In your opinion, how motivated or not motivated are the Staff working at the OD Office?	<table border="0"> <tr> <td>Highly Motivated</td> <td style="text-align: right;">1</td> </tr> <tr> <td>Motivated</td> <td style="text-align: right;">2</td> </tr> <tr> <td>Neither, just doing their jobs</td> <td style="text-align: right;">3</td> </tr> <tr> <td>Demotivated</td> <td style="text-align: right;">4</td> </tr> <tr> <td>Highly Demotivated</td> <td style="text-align: right;">5</td> </tr> </table>	Highly Motivated	1	Motivated	2	Neither, just doing their jobs	3	Demotivated	4	Highly Demotivated	5		
Highly Motivated	1													
Motivated	2													
Neither, just doing their jobs	3													
Demotivated	4													
Highly Demotivated	5													
14.02	<p>What are the biggest challenges you face as an OD Director?</p> <p>Please select up to 5 most important reasons. Ask them to provide their opinion and then select from the list.</p> <p>MULTI RESPONSE.</p>	<table border="0"> <tr> <td>Getting our staff to work the required hours</td> <td style="text-align: right;">1</td> </tr> <tr> <td>Motivating my staff</td> <td style="text-align: right;">2</td> </tr> <tr> <td>Getting sufficient OD equipment and infrastructure</td> <td style="text-align: right;">3</td> </tr> <tr> <td>Getting sufficient facility equipment and infrastructure</td> <td style="text-align: right;">4</td> </tr> <tr> <td>Getting access to medicine supplies</td> <td style="text-align: right;">5</td> </tr> <tr> <td>Getting approvals to purchase things</td> <td style="text-align: right;">6</td> </tr> </table>	Getting our staff to work the required hours	1	Motivating my staff	2	Getting sufficient OD equipment and infrastructure	3	Getting sufficient facility equipment and infrastructure	4	Getting access to medicine supplies	5	Getting approvals to purchase things	6
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Getting sufficient facility equipment and infrastructure	4													
Getting access to medicine supplies	5													
Getting approvals to purchase things	6													

		Financing of the OD is not strong so we cannot improve practices of facilities	7
		I don't have sufficient authority to make decisions in the best interest of the OD	8
		Recruiting talented professionals to work in this OD	9
		Too few patients and facilities are not busy enough	10
		Insufficient mentors and senior personnel for staff to learn from	11
		Insufficient medical staff available	12
		Other (specify)	88
		Other (specify)	89
		Other (specify)	90
14.03	Which of the following, in your opinion, is the most important motivator for your staff? SELECT 1 ONLY	Helping people	1
		Money	2
		Working for government provides employment and long term security	3
		Working for government provides links to other opportunities	4
		Other (specify)	88
14.04	Which of the following, in your opinion is the second most important motivator for your staff? SELECT 1 ONLY	Helping people	1
		Money	2
		Working for government provides employment and long term security	3
		Working for government provides links to other opportunities (secondary jobs, etc.)	4
		Other (specify)	88
14.05	Since the introduction of incentives such as HEF / SDG and Midwifery Incentives, have you seen any impact on motivation of staff? SHOW THE SCALE, SELECT 1 ONLY.	A big improvement on staff motivation	1
		A moderate improvement on staff motivation	2
		Things have mostly remained the same	3
		No impact at all	4
		Not applicable, don't have incentives in this OD	99
14.06	How much do the various incentives motivate or not motivate YOU as an individual? I will read a few statements. Please state whether you think, in these areas, incentive payments: Do not motivate me – 1 Slight motivate me – 2 Moderately motivate me – 3 Highly motivate me – 4	a. Work and respect the prescribed work hours	
		b. Work longer hours	
		c. Request less informal or customary payments	
		d. Share my skills with other members of staff	
		e. Continue working as a civil servant	
		f. Pursue less dual practice work	
14.07	How do you think incentive payments are impacting health centers and this OD? I will read a few statements. Please state whether you think incentive payments are making this issue:	Because of incentive payments... a. Quality of Services is... b. Numbers of patients served are... (improving means increasing in numbers of patients) c. Team work is...	

	<p>Considerably worse – 1 Slightly worse – 2 Same-same: not improving or getting worse– 3 Improving slightly – 4 Improving considerably – 5</p>	<p>d. Management of health centers is.... e. Administration of health centers is.... f. Management of the OD is.... g. Administration of the OD is.... h. The cleanliness of the health centers is... i. The monitoring of working hours is... (stricter monitoring means improving) j. Time to do dual practice is... (Having more time to do dual practice means code 1 -getting considerably worse.Having less time to do Dual practice means code 5 - improving considerably) k. Motivation of public health professionals is... l. Overall staff commitment to work in public sector fully is....</p>
14.08	<p>Which are the 2 BEST health centres in your district? OPEN-ENDED. RECORD RESPONSE.</p>	<p>HC1: HC2:</p>
14.09	<p>Which are the 2 WORST health centres in your district? OPEN-ENDED. RECORD RESPONSE.</p>	<p>HC1: HC2:</p>