Lao PDR Health Center Workforce Survey

Findings from a nationally-representative health center and health center worker survey

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ACRONYMS AND ABBREVIATIONS

LIST OF ABBREVIATIONS

BEONLSS	Basic and Essential Obstetrics and Newborn Life Savings Skills
DEA	Data Envelopment Analysis
EAP	East Asia and the Pacific
GGHE	General government health expenditure
GNI	Gross national income
HC	Health center
HRH	Human resources for health
IMCI	Integrated Management of Childhood Illnesses
IMPC	Integrated Management of Pregnancy and Childbirth
IYCF	Infant and young child feeding
MDGs	Millennium development goals
MCG	Maternal and child health
OOP	Out-of-pocket
RDF	Revolving drug funds
UCH	Universal health coverage
UFGE	Umbrella Facility for Gender Equity
WHO	World Health Organization

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CONTENTS

LIST OF FIGURES

LIST OF BOXES

EXECUTIVE SUMMARY

This policy note provides a snapshot of human resources for health (HRH) in health centers in the Lao People's Democratic Republic (Lao PDR) based on an analysis of a health facility survey (the UFGE-CNP health center survey) that collected information from a nationally-representative sample of 120 public health centers (HCs) from 2013 to 2014. The survey was conducted as a baseline for health sector reform plans, to inform policymaking as Lao PDR scales-up programs to attain health-related MDGs, expand basic health services, and attain universal health coverage (UHC).

Key Messages

- At the national- and regional-level: The supply of critical human resources for health (HRH) was *maldistributed* (by geography, level, and type) and *low* – just over half WHO recommendations – although public spending on HRH, as a proportion of general government health expenditure, was *within* global and regional norms. A strategic review of the distribution of frontline HRH, with an adequate mandate, should be conducted and acted upon, to improve the allocative efficiency and equity of HRH.
- At the facility-level: Health centers (HCs) were staffed typically with four health workers who were relatively *underutilized,* with *only six* consultations per health worker per day on average. Investments are needed to reduce demand-side barriers (physical, cultural, and financial) to increase the extremely low utilization of essential health services, especially in rural areas, as underutilization is driving low productivity and low clinical ability.
- HC workers, comprised mainly of medical assistants and nursing professionals, with mid-level degrees, and four years of work experience at the HC, received a mean income of 1,599,000 kip (≈149 percent of monthly prorated GNI per capita), including income from supplementary sources outside the HC for 40 percent of health workers. These sources were almost entirely agriculture or small enterprise-derived, with only few related to medical 'dual-practice'.
- Almost half (44 percent) of HC staff had *never* undergone any in-service training and where training was received, it was often *mismatched* with the type of health services being provided by the health worker. There are *substantial gaps* in clinical knowledge related to the management of MDG-related clinical situations, particularly for treating undernutrition and treating a woman bleeding after childbirth. Training programs and supervision will hence need to be strengthened significantly to address this critical issue.
- With regard to gender, although most (57 percent) HC workers were female, 42 percent of health staff conducting deliveries were *male*, which may compound the already high cultural barriers in accessing essential maternity services. With regard to language, although 85 percent of HC workers spoke the most common language in the community (typically Lao), *only* 31 percent spoke the second most common language, and 7 percent spoke the third most common language.
- Poor *service readiness* (infrastructure, availability of medicines and equipment), in addition to poor compensation, were the main sources of *dissatisfaction* among health workers, suggesting that *supply-side investments* in medicines and equipment would not only improve the technical capacity of health centers but also health worker satisfaction.

Introduction

While *on-track* for child health and maternal health MDGs, Lao PDR continues to have some of the worst maternal and child health (MCH) outcomes, both globally and in the East Asia and Pacific (EAP) region. Under-five and infant mortality rates are high relative to GDP per capita, and utilization of essential health services is low, given significant demand-side barriers including physical access, cultural, and financial barriers. Furthermore, about a third of all children under-five remain underweight and almost half are stunted. Lao PDR is hence *off-track* on the nutrition-related MDG 1c. In addition to poor aggregate measures, there are significant economic, urban-rural, geographic, and ethnic group-related inequalities in health and nutrition outcomes.

This policy note provides a snapshot of human resources for health (HRH) in health centers in the Lao People's Democratic Republic (Lao PDR) based on an analysis of a health facility survey (the UFGE-CNP health center survey) that collected information from a nationally-representative sample of 120 public health centers (HCs) from 2013 to 2014.[1] This survey was conducted as a baseline for health sector reform plans, to inform policymaking as Lao PDR scales-up programs to attain health-related MDGs, expand basic health services, and attain universal health coverage (UHC). This note complements a related health financing note[2] which includes health center financing data from the same survey. Key findings from that note include low government health spending, associated with a high reliance on out-of-pocket (OOP) spending and external financing, which translates to underfunding of HCs (especially non-wage recurrent expenditure) and dependence on OOP revenue from revolving drug funds (RDFs).

The HC survey includes information on the supply, qualifications, and demographics of HRH, training, clinical abilities, productivity, income, satisfaction, ethnolinguistic characteristics, and gender considerations. As the Government of Lao PDR moves forward on the national strategic policy for HRH, which has four objectives – (i) strengthen leadership and management of HRH; (ii) ensure availability of an adequate number of suitably qualified health workers at all levels of the health system; (iii) ensure a competent and motivated health workforce through improved training and supervision; and (iv) ensure maximum efficiency, quality, and acceptability of the health workforce through attention to equity issues[3] - findings from this survey can help inform the actualization of these objectives.

This policy note is organized as follows: Section 1 provides stylized facts about the national HRH context, including the supply, distribution, and public financing of health workers; Section 2 presents findings from the national public HC and HC worker survey, including workforce characteristics, gender and ethnolinguistic dimensions, distribution, income, training, satisfaction, productivity, and ability; and Section 3 concludes with key recommendations and limitations.

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[1] WThis survey was co-financed by the Umbrella Facility for Gender Equity (UFGE) and the Environmentally and Socially-Sustainable Development Trust Fund.

[2] World Bank (2015). Government expenditure on health in Lao PDR: Overall trends and findings from a health center survey.

[3] Ministry of Health (2009). *National Policy on Human Resources for Health, Vientiane.*

1. The National Human Resources for Health Context

1.1 Health Workforce Supply, Distribution, and Financing

1. The supply of HRH in Lao PDR was low, at just over half that recommended by WHO (1.23 doctors, nurses, and midwives per 1,000 population) in 2012, although this is in the context of extremely low utilization of health services. HRH is a key building block of any health system, for which WHO has established a norm of at least 2.3 doctors, nurses, and midwives per 1,000 population in order to adequately provide essential health services.[4] In Lao PDR, there were 1,981 physicians and 6,027 nurses and midwives in 2012[5], implying an additional 6,975 doctors, nurses, and midwives are needed, once demand-side utilization constrains are addressed. This needs gap has slightly widened since it was last estimated at 6,226 workers.[6][7] HRH headcounts per capita in Lao PDR, although much lower than other countries in the region (Table 1), are not the only factor which affects population health outcomes. For example, Cambodia, which has a similar supply of HRH, attains much better population health outcomes.

Table 1: HRH per 1,000 population, lao PDR and comparator countries, latest available year[8]

Country	Doctors per 1,000 population	Nurses and midwives per 1,000 population	Ratio of nurses and midwives per doctor	Doctors, nurses, and midwives per 1,000 population
Cambodia (2000)	0.16	0.84	5.3	1.00
Lao PDR (WHO, 2012)	0.18	0.88	4.8	1.06
Lao PDR (MoH, 2012)	0.30	0.93	3.0	1.23
Zambia (2004)	0.12	1.01	8.4	1.13
Timor-Leste (2011)	0.07	1.11	15.2	1.19
Bhutan (2012)	0.26	0.98	3.8	1.24
Indonesia (2012)	0.20	1.38	6.8	1.59
Myanmar (2012)	0.61	1.00	1.6	1.62
Vietnam (2011)	1.16	1.14	1.0	2.30
East Asia and Pacific (2010-2012 average)			***4.9***	***4.5***
Lower-Middle Income Countries (2010-2012 average)			***7.5***	***3.9***
WHO international standard (2006)				***2.3***

[4] WHO (2006). *World Health Report: Working Together for Health, Geneva.*

[5] Department of Organization and Personnel, Ministry of Health, Lao PDR (2012). For cross-country comparisons from the same data source, WHO estimates from the Global Health Workforce Statistics database, World Health Organization, Geneva (http://www.who.int/hrh/statistics/hwfstats/) are 1,160 physicians and 5,581 nurses and midwives in 2012, and a deficit of 8,900 doctors, nurses, and midwives.

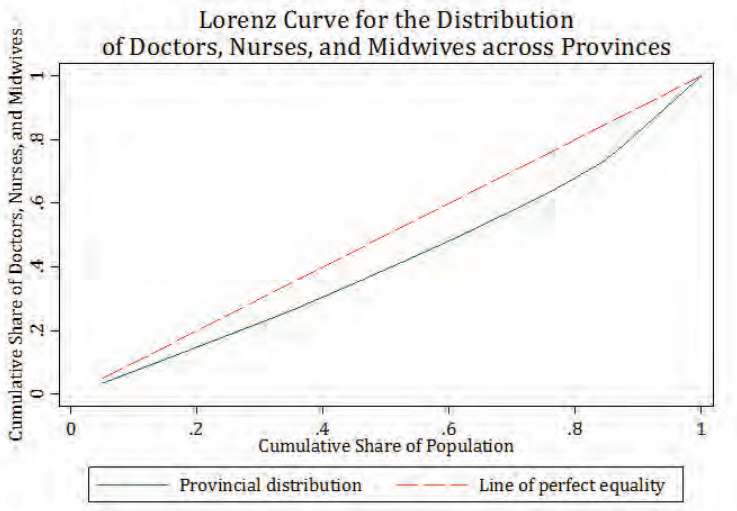
[6] Kanchanachitra, C., M. Lindelow, T. Johnston, P. Hanvoravongchai, F.M. Lorenzo, N.L. Huong, S.A. Wilopo, and J.F. dela Rosa (2011). "Human Resources for Health in Southeast Asia: Shortages, Distributional Challenges, and International Trade in Health Services," Lancet, 377: 769-781.

[7] An additional recruitment quota of 4,000 health workers for 2013-14 and 700 health workers for 2014-15 was planned, since these 2012 figures. This compares with the quota for 2012-13 which was 1141.
Source: Lao PDR, *Ministry of Health Annual Report on Health Staff Distribution* (2012).

[8] Sources: For 2011-12, Global Health Workforce Statistics database, World Health Organization, Geneva. (http://www.who.int/hrh/statistics/hwfstats/)
For Lao PDR MoH, 2012, *Department of Organization and Personnel, Ministry of Health, Lao PDR*,
For 2006 and earlier, WHO (2006). *World Health Report: Working Together for Health, Geneva.*

2. Inequalities remain with regard to the provincial distribution of critical HRH in Lao PDR. About one-third of the doctors, nurses, and midwives serve just one-fifth of the population, as visualized using a Lorenz curve which plots the cumulative share of doctors, nurses, and midwives, with the cumulative share of the population (Figure 1). The GINI coefficient[9] for this HRH distribution was 0.16 but this does not take into consideration inequalities within provinces – past analysis on urban and rural HRH inequalities found an estimated 20 percent of the health workforce serving some 80 percent of the population living in rural areas.[10]

Figure 1: Lorenz curve for the distribution of doctors, nurses, and midwives between provinces[11]



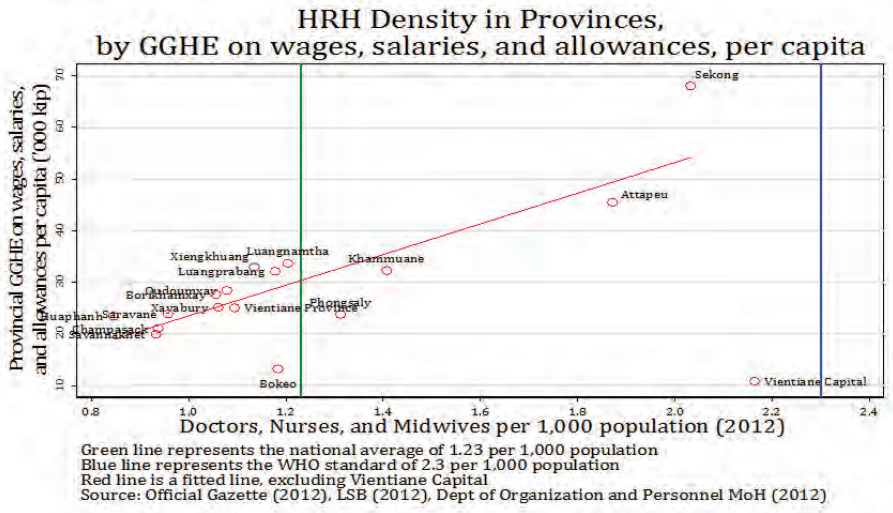
[9] The GINI coefficient which is a quantitative representation of inequality where 0 represents perfect equality and 1 represents perfect inequality is basically the area between the red dotted line and the green line, divided by 0.5.

[10] Dawson, A., T. Howes, N. Gray, and E. Kennedy (2011). *Human Resources for Health in Maternal, Neonatal, and Reproductive Health at Community Level: A Profile of Lao People's Democratic Republic*, Human Resources for Health Knowledge Hub and Burnet Institute, Sydney, Australia.

[11] If the distribution of these health workers were equal, it would take the form of the red dotted line, but instead is shifted further to the right, as represented by the green line. Data source: Department of Organization and Personnel, Ministry of Health, Lao PDR (2012).

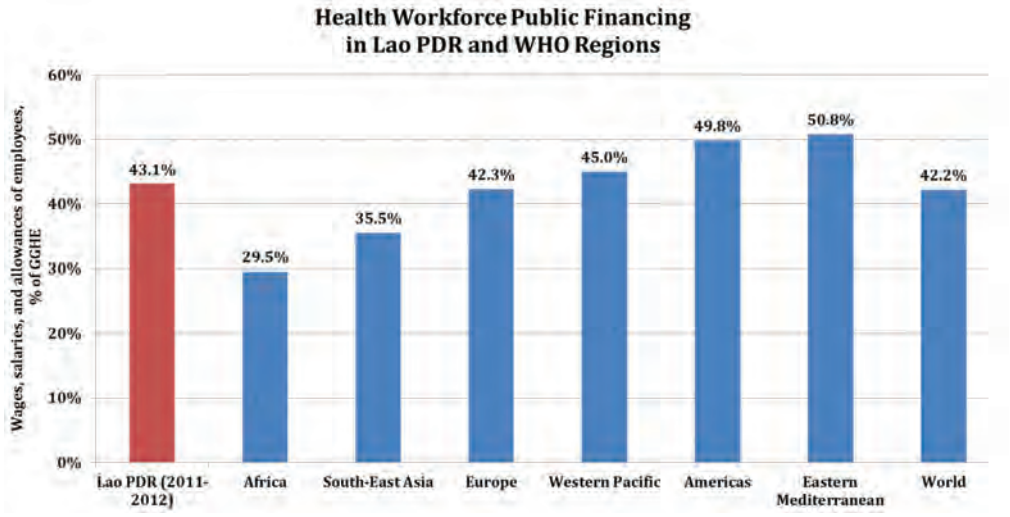
3. The maldistribution of HRH cannot be purely explained by misallocation of HRH expenditure, as although there was a clear correlation between per capita provincial HRH spending and provincial HRH headcounts, there are many outliers. For example, Khammuane province spends a similar amount on HRH as Xiengkhuang province per capita, but was able to maintain a much larger per capita headcount of doctors, nurses, and midwives (Figure 2). These differences could be attributed to hiring choices between different types of health workers and/or due to different seniorities, but suggests that there may be fiscally-neutral solutions to improving HRH headcounts.

Figure 2: Doctors, nurses, and midwives per 1,000 population in each province, by provincial HRH spending



4. Despite the relatively low numbers of health workers in Lao PDR, the fraction of general government health expenditure spent on wages, salaries, and allowances[12] in Lao PDR, at 43 percent, was already comparable both with the global average and the WHO Western Pacific Region (Figure 3), *even before* Lao PDR implemented a major salary increment for the civil service. This suggests that the relative deficiency in HRH headcounts is reflective of an overall underfunding of the public health system, rather than a selective underfunding of HRH relative to other components of the system.

Figure 3: Wages, salaries, and allowances of employees as percentage of general government health expenditure (GGHE), 2006[13]



5. In 2013 (just prior to this survey), a large increase in the salaries and benefits for public employees was implemented. The civil service salary index rose by 37 percent in 2013, and was expected to rise by a similar percentage in 2014 and 2015 as part of the three year plan. The IMF noted that this two-fold increase in civil service compensation from 5 percent of GDP in 2012 to 10 percent in 2013 puts Lao PDR 'well above the average level for international comparators'. Hence, although [IMF] staff 'recognize the need for an increase in civil service pay … especially in health', a 'more measured pace of future compensation increases' will be required.[14] An earlier World Bank study also noted that although the formal salary for civil service workers was well below private sector comparators, the private sector premium disappeared when intangible benefits (for example, work hours and in-kind benefits) were factored in.[15]

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12 Including both central and provincial expenditure

13 Source for WHO regional data: Hernandez, Patricia, Sigrid Dräger, David B. Evans, T. Tan-Torres Edejer, and Mario R. Dal Poz (2006). "Measuring Expenditure for the Health Workforce: Evidence and Challenges." Geneva: World Health Organization. http://www.who.int/entity/hrh/documents/measuring_expenditure.pdf

14 IMF (December 2013). *Lao PDR 2013 Article IV Consultation. IMF Country Report No. 13/369.*

15 World Bank (June 2010). *Lao PDR Civil Service Pay and Compensation Review: Attracting and Motivating Civil Servants.*

6. The implied average monthly compensation, including allowances, for government payroll health workers of 14,189[16] was 1,290,000 kip in 2012, equivalent to US$1,933 per year (152 percent of GNI per capita).[17] Hence although there is a long term need to increase headcounts to address HRH shortages, initial policy steps should focus on improving the technical and allocative efficiency, and quality, of the existing workforce, within the context of the current fiscal environment, and should certainly not be at the expense of non-wage recurrent spending on health which is already under significant pressures.[18]

[16] Department of Organization and Personnel, Ministry of Health, Lao PDR (March 2012). All types of health workers are included, including support staff.

[17] WDI, 2012. Official Exchange Rate is 8,008 kip to 1 US dollar.

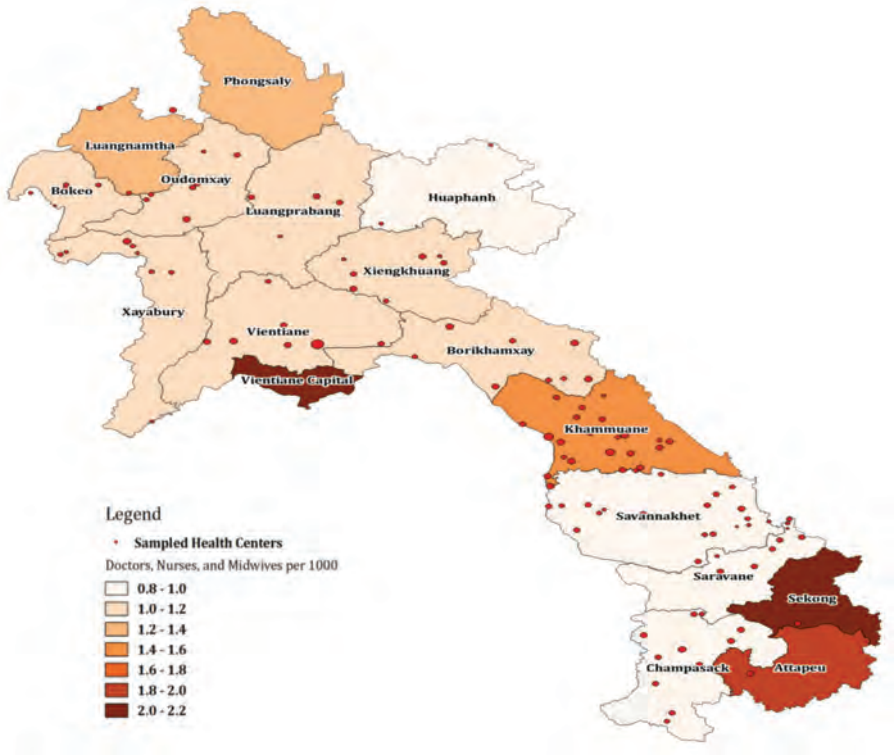
[18] World Bank (2015). Government expenditure on health in Lao PDR: Overall trends and findings from a health center survey.

2. The Health Center Workforce Survey

2.1 Sampling and Design

1. The UFGE-CNP HC survey sampled 120 public HCs across the country (Figure 4) between 2013 and 2014.[19] Hospitals and private facilities were not included as the focus was on public primary care providers. For each HC, two health workers (all types and cadres) were sampled randomly without replacement, resulting in a total health worker sample of 232.[20] The survey included modules on demographics, in-service training, hours worked, income (including dual-practice), satisfaction, and clinical knowledge, as assessed by vignettes of hypothetical cases related to child health (preventive and curative), maternal health, and nutrition.

Figure 4: Map showing the HCs sampled for this survey and p HRH densities[21]



[19] Of the 120 health centers surveyed, 36 were in the North region; 36 from the Central region; and 48 from the South region. Of the 120, 81 were in rural areas and the remaining 39 were urban health centers. *Sampling:* Of the 120 health centers, 80 health centers were randomly sampled with equal probability of selection, from a register of all health centers in Lao PDR obtained from the Department of Health Care, and data collection took place from May to June 2014. This sample was combined with an earlier sample, which used nearly identical survey instruments, of 40 health centers which were surveyed as part of an impact evaluation of a project in the central and southern provinces. There were no significant differences in relevant parameters between the two samples. Data collection was performed from May to July 2013.

[20] The missing eight health workers are officially on the health worker roster but could not be located after three attempts or did not consent for an interview.

[21] Sampled health centers are indicated with red dots, whose size is proportionate to number of health center workers. Source for HRH (Doctors, Nurses, and Midwives) density data is the Department of Organization and Personnel, Ministry of Health (March 2012).

2.2 Health Center Workforce Characteristics

2. The median number of health workers per HC was four, typically comprising three civil servants and one volunteer[22] or donor/NGO-funded health worker assigned to the HC. Considering that these were basic public primary care facilities, most HC workers were either medical assistants (30 percent) or nursing professionals (37 percent). Midwives who provide critical antenatal and obstetric services comprise 15 percent of the HC workforce, and only 4 percent of those sampled were medical doctors (Figure 5). Almost all (99 percent) of the HC workers had a basic, mid-level, or high-level degree (Figure 6). Most medical assistants (87 percent) are mid-level degree holders, while nurses are typically either mid-level degree holders (69 percent) or basic-level degree holders (28 percent).[23]

Figure 5: HC worker grade

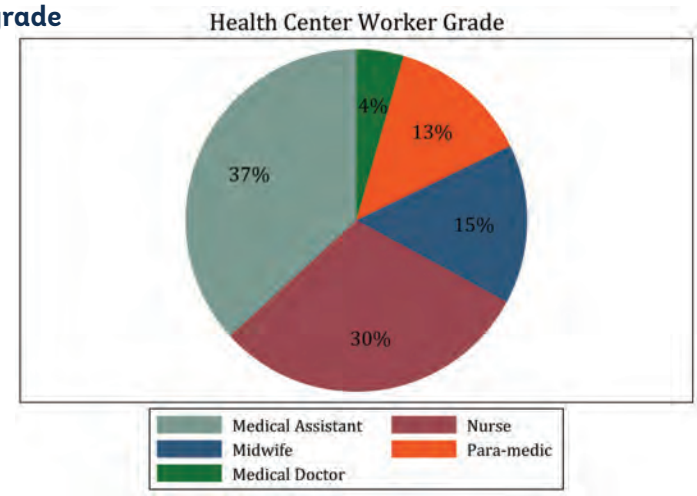
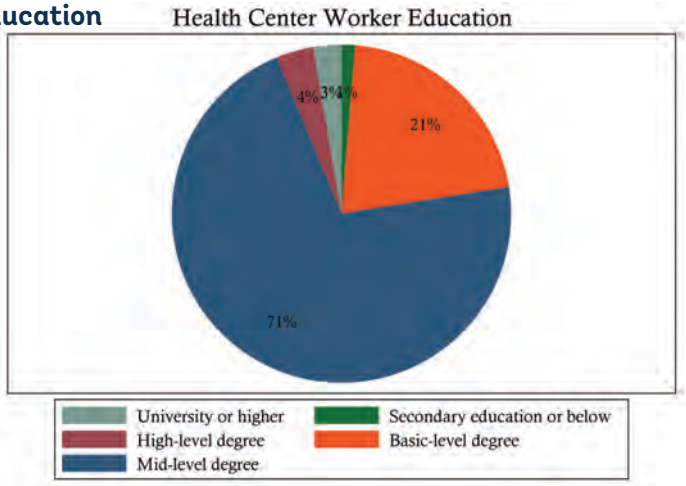


Figure 6: HC worker education

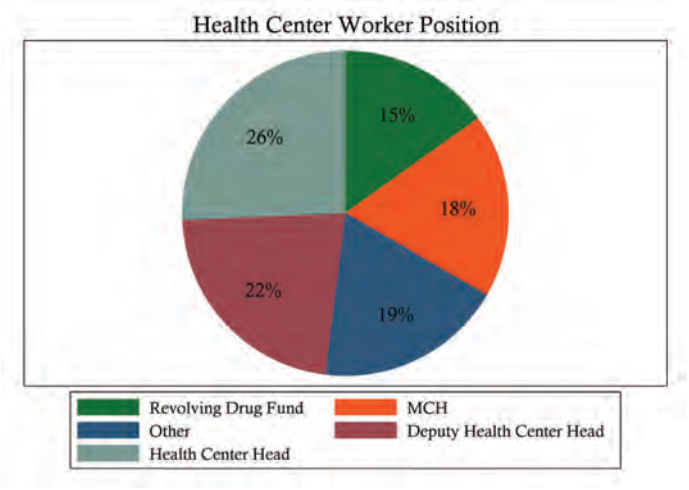


[22] Volunteers are a term used to denote health workers who have started work at a health facility, while awaiting an official civil service appointment.

[23] Basic training requirements for health workers are as follows: Medical Doctors (6-year training), Graduate Nurses (4-year training), Registered Nurses (3-year training), Midwives with Bachelors Degree (4-year training), Registered Midwives (3-year training), Community Midwives (2-year training), Medical Assistants (3-year training), and Paramedics (3-year training).

3. A typical HC worker would be a 30-year old female with a mid-level degree that was completed more than five years prior to the time of survey and had worked at the HC for just over four years. Within the HC, an HC worker could occupy one of several positions, the most common being the HC head and the deputy (Figure 7), followed by various specialized functions (for example, providing MCH services) and responsibilities (for example, managing the revolving drug fund). HC heads are not necessarily the most highly-educated of the positions, as indeed some do not have post-secondary qualifications, although they are presumably the most senior in service.

Figure 7: HC worker position

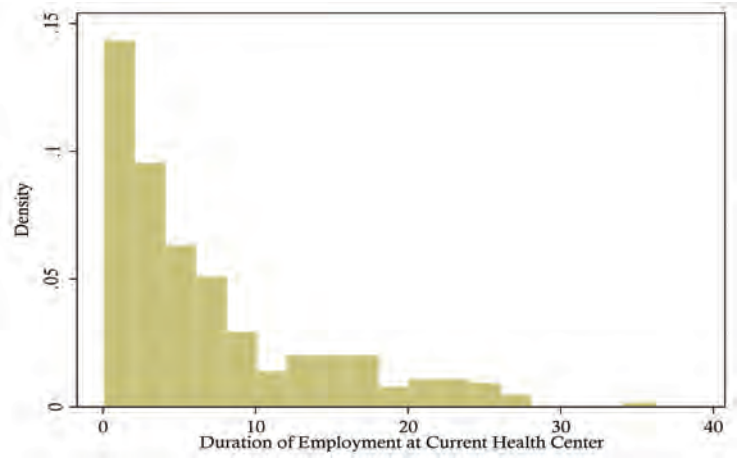


4. Small urban-rural[24] differences in HC staffing characteristics were noted, with the average urban health center in the sample staffed with 4.4 health workers compared with 3.8 in rural health centers. Women comprise a large majority (71 percent) of urban health center health workers, compared with just below 50 percent, in rural HCs. Non-Lao ethnicities are similarly more represented among rural rather than urban HCs (45 percent compared with 29 percent).

5. The distribution of employment duration is positively skewed (Figure 8), suggesting either a high turnover of HC workers or a recent sharp increase in employment. The median duration of employment for civil servants employed at the current HC is 4.5 years, but the mean is 7.0 years. For volunteers who are essentially awaiting civil service appointments, the median period of employment in that volunteer status, was 1 year (mean of 1.5 years).

[24] For the national census, the Lao Statistics Bureau defines urban-rural status on a village-by-village basis, based on several criteria including population size and amenities. As HCs serve multiple villages, adapted criteria based on these village-level criteria were used to generate urban-rural status at HC-level.

Figure 8: Duration of employment at current HC



2.2.1 Ethnolinguistic Concordance and Gender Dimensions

6. Lao PDR is one of the more ethnically diverse countries in the region, with 49 different ethnic groups and 160 subgroups recognized by the Lao Front for National Construction. The ethnolinguistic fractionalization index for Lao PDR, which is the probability that 'two randomly selected individuals from a population will belong to two different groups', is high at 0.514.[25] The relevance is that such cultural indices, along with income, income inequality, and female education can 'explain practically all of the variation in child mortality across countries'.[26]

7. There were large differences in the health coverage indicators by ethnolinguistic groups. For example, 59 percent of women from Lao-Tai headed-households had deliveries assisted by skilled attendants, compared with 21 percent for Mon-Khmer, 18 percent for Hmong-Mien, and 18 percent for Chinese-Tibetan-headed households (Table 2). Stunting prevalence and DPT3 coverage similarly vary by ethnolinguistic group. The linkages between the ethnicities and language skills of health providers and that of their catchment populations is explored in Box 1.

8. Gender is also an important HRH policy consideration, both from the demand-side perspective (for example, gender-related barriers to accessing health and gender discrimination in health expenditure) and from a supply-side perspective (as health care providers).[27] This survey explores both these perspectives in Box 2 based on empirical survey data.

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[25] Alberto Alesina et al. (2003). Fractionalization. Journal of Economic Growth, 8: 155–194.

[26] Filmer, D., and L. Pritchett (1997). *Child Mortality and Public Spending on Health: How Much Does Money Matter*? Policy Research Working Paper No. 1864, World Bank, Washington, DC.

[27] Standing, Hilary (2000). "Gender: A Missing Dimension in Human Resource Policy and Planning for Health Reforms." *Human Resources Development Journal* 4 (1): 27–42.

Table 2: Health coverage and outcome indicators, by ethnolinguistic group[28]

Ethnolinguistic group	Percent of national population[29] (%)	Skilled birth attendance (%)	DPT3 coverage (%)	Moderate and severe stunting prevalence among under-fives (%)
Lao-Thai	66	59	67	33
Mon-Khmer	22	21	49	56
Hmong-Mien	9	18	27	61
Chinese-Tibetan	3	18	32	61

[28] Source for skilled birth attendance, DPT3 coverage, and stunting prevalence: LSIS, 2012.
[29] Lao PDR Population Census, 2005.

Box 1: Ethnolinguistic Concordance

Health centers are key frontline health facilities, which provide critical MCH services, to both urban and rural communities in this ethnically diverse country.

This survey finds that HC workers by and large mirrored the diverse ethnicity of the country - approximately 61 percent were Lao, 10 percent were Khmu, and 9 percent were Hmong; which was comparable to the national distribution of 55 percent, 11 percent, and 8 percent respectively. However, even though the ethnic composition of HC workers mirrored the national aggregate composition, there was assortment in the placements of HC workers such that only 56 percent of HC workers were of the same ethnicity as the most common ethnicity in the catchment population (Figure 9). A further 29 percent had the same ethnicity as either the second or third most common ethnicity in the catchment population.

Linguistic concordance may be more important as health workers and their patients need to be able to communicate. **This survey finds that although 85 percent of HC workers were able to speak the *most* common language of the catchment population (Figure 10), typically the Lao national language, very much fewer were able to speak languages other than the most common language** – only 31 percent of HC workers were able to speak the second most common language of the catchment population and only 7 percent of HC workers were able to speak the third most common language of the catchment population. A household survey would be required to adequately determine the percentage of households for whom there are no common languages with any of the HC workers, but the sharp drop in language skills for languages other than the most common language suggests that language may be a barrier in accessing health care services for non-Lao speakers. Furthermore, 15 percent of HC workers would not be able to use their first language to communicate with most of the people in their catchment population.

This is not due to a lack of linguistic ability on the part of health workers, as almost half of HC workers reported being able to speak two or more languages, with Lao being the most widely-spoken language (96 percent), followed by Khmu (20 percent), and Hmong (17 percent). However, the linguistic diversity of Lao PDR, especially in rural areas, presents an inherent challenge for frontline health care service delivery. Targeted recruitment of health workers from rural ethnolinguistic groups, coupled with an intentional deployment back to their communities, may mitigate this challenge, and has been used successfully in Vietnam.[30]

[30] Dolea, Carmen (2010). *Increasing Access to Health Workers in Remote and Rural Areas through Improved Retention: Global Policy Recommendations.*,World Health Organization, Geneva.

Figure 9: Ethnic concordance between HC workers and the catchment population

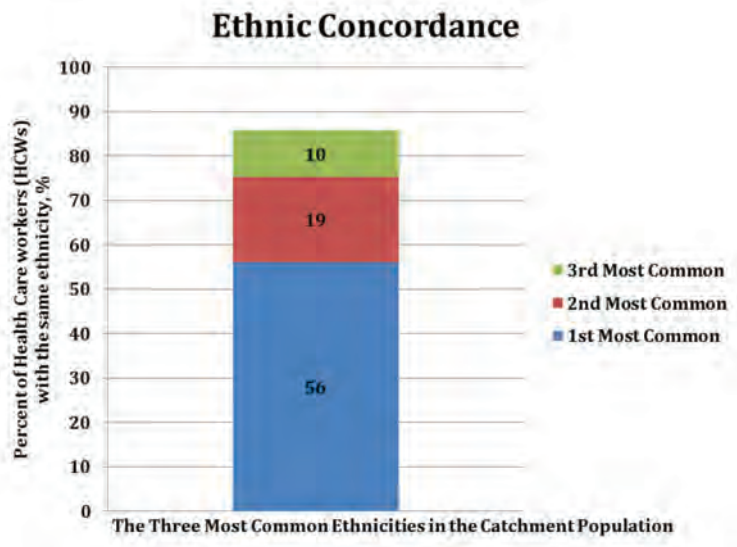
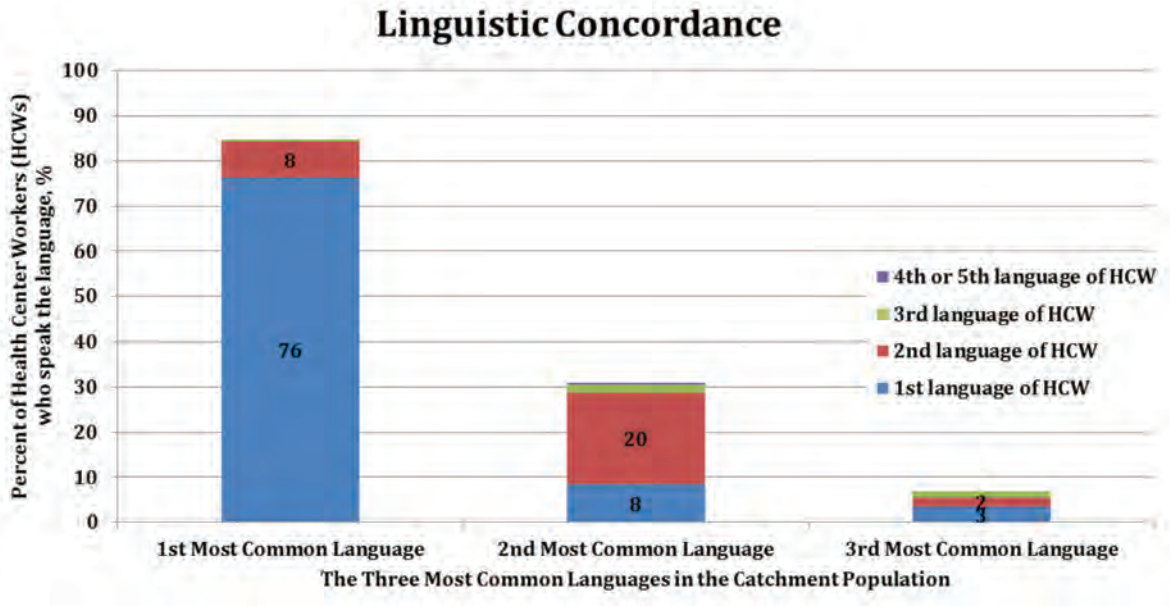


Figure 10: Linguistic concordance between HC workers and the catchment population



Box 2: Gender Dimensions

Gender dimensions can be explored from two perspectives: Firstly, from the patient-client's perspective, in particular, whether pregnant women are able to receive maternity care from a female provider; and secondly, from the perspective of gender equity in employment.

With regard to patient-client perspectives, **this survey finds that of all the HC workers who conducted a delivery (either at the HC or as outreach) within the last three months of the survey, 42 percent were male,** typically medical assistants and male nurses. This is somewhat unusual given that most health workers were female, especially for health workers who are midwives and/or had MCH responsibilities (Table 3). The utilization of maternity services is already low in Lao PDR, with skilled birth attendant rates of only 31 percent in rural areas. Cultural barriers hence may be compounded by the lack of gender sensitivity in the provision of MCH services. Considering that the HC workforce already includes many female health workers trained in NCH, it may be helpful to explicitly allow pregnant women the choice, where feasible, to be attended by a female birth attendant.

With regard to gender and employment, **this survey finds that women make up the majority (57 percent) of HC workers, and that their aggregate compensation is equal to that of male counterparts, although they are on average three years junior to their male counterparts** (Table 3). Certain positions and grades are dominated by women – midwives and MCH providers – but most HC heads are male (only 37 percent are female). In some grades and positions, women are compensated less than their male counterparts (for example, as medical assistants and midwives) although the reverse is true for some other grades and positions. There is some suggestion that there is an experienced cohort of women serving as deputy HC heads. Female HC workers are more highly educated – all have at least a basic degree, 77 percent had a mid-level degree compared with 64 percent for males, and 18 percent had a basic-level degree compared with 25 percent of males.

Many of these findings could be explained if HCs in the past had mainly been staffed by male health workers, but that recent times have seen the entry of a more highly educated and mainly female cohort of health workers. If true, such reforms would be welcome.

Table 3: Gender dimensions of HC workers

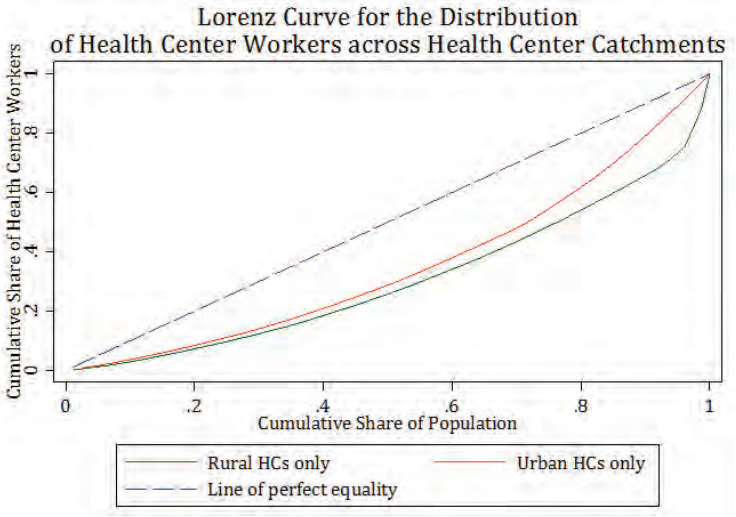
Type of health worker	Percent who are female (%)	Median compensation[31] of female workers (kip) (% of median male worker's compensation)	Median experience of female workers (years) (male workers, years)
Position within the HC			
HC Head	37	1,723,000 (102)	6.5 (9.8)
Deputy HC Head	58	1,446,000 (93)	15.2 (7.6)
MCH	87	1,167,000[32]	3.3
Drug Revolving Fund	54	1,490,000 (210)	4.3 (4.3)
Grade			
Medical Assistants	56	1,300,000 (84)	3.3 (6.5)
Nursing Professionals	56	1,250,000 (110)	4.3 (5.4)
Paramedics	51	1,595,000 (115)	4.3 (16.3)
Midwives	77	1,500,000 (89)	9.8 (9.8)
All	***57***	***1,363,000 (100)***	***4.3 (7.6)***

[31] Excluding supplementary income earned outside the health center.
[32] Only five male MCH staff, who are all volunteers.

2.3 Health Center Workforce Distribution

9. There are large inequalities in the distribution of HC workers, as shown by Lorenz curves (Figure 11) of HC workers (all positions and grades), for urban HC catchment areas and, separately, for rural HC catchments areas. These inequalities do not merely reflect an urban-rural divide, as even within rural areas alone, the least served half of the rural population was served by only 26 percent of rural HC workers. In urban areas alone, the least served half of the urban population was served by only 28 percent of urban HC workers. In other words, there is significant maldistribution of the health workforce within rural areas and within urban areas, not just between urban and rural areas, which may have implications on the allocative efficiency of service delivery.

Figure 11: Lorenz curve for the distribution of all HC workers across HC catchment areas[33]

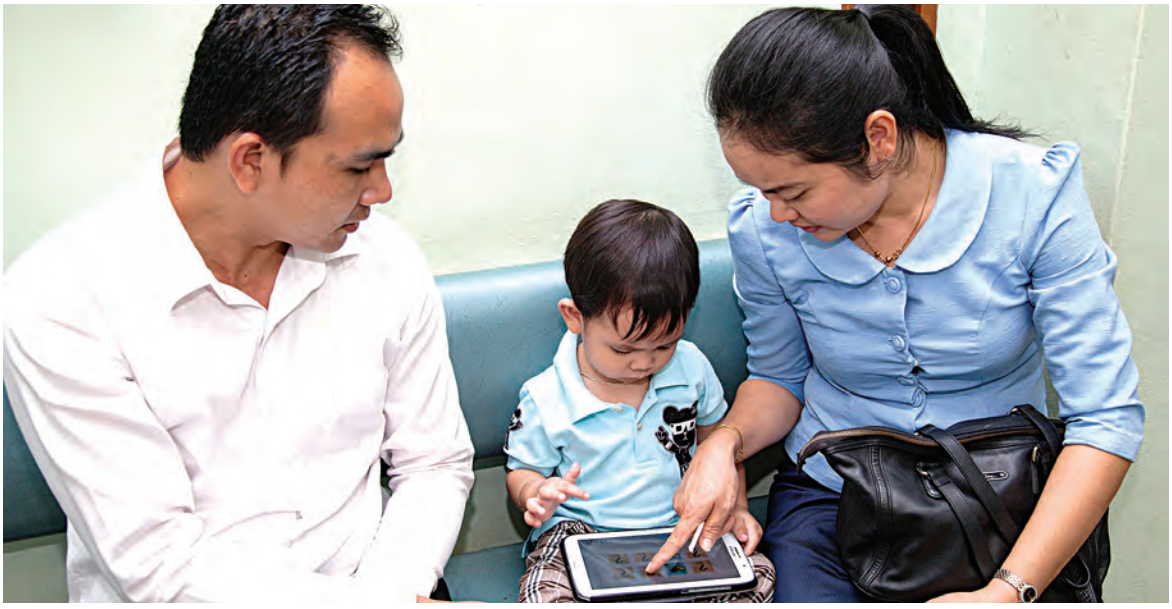


[33] Lorenz curves and GINI coefficients can be used to measure imbalances in the geographic distribution of health workers. Munga, Michael A., and Ottar Mæstad (2009). "Measuring Inequalities in the Distribution of Health Workers: The Case of Tanzania." *Human Resources for Health*, 7 (1): 4. doi:10.1186/1478-4491-7-4; and Soucat, Agnes, Richard Scheffler, and Tedros Adhanom Ghebreyesus, eds (2013). *The Labor Market for Health Workers in Africa: A New Look at the Crisis.* The World Bank. http://elibrary.worldbank.org/doi/book/10.1596/978-0-8213-9555-4.

10 **Comparisons with Tanzania also highlight an interesting feature.** Whereas in Tanzania the distribution of health workers in rural districts is more equal compared with urban districts, in Lao PDR, this trend is reversed as rural HC catchment areas have greater maldistribution of health workers than urban HC catchment areas. This characteristic – greater imbalances in the distribution of HRH within rural areas, where, for example, 27 percent of rural HC workers have been allocated to provide services for just 5 percent of the rural population - should be explored further. There is also some suggestion that health workers in Lao PDR are distributed inequitably (GINI of 0.16 at provincial-level) compared with Tanzania (GINI of 0.229 at district-level, which are of comparable size to Lao provinces). See Table 4.

Table 4: GINI coefficients for the distribution of health care workers, lao PDR and tanzania

GINI coefficients 0 = perfect equality; 1= perfect inequality	Lao PDR	Tanzania[34]
Both urban and rural health center catchments (HCCs)	**0.363**	-
Rural HCCs only	**0.392**	-
Urban HCCs only	**0.306**	-
Provinces in Lao PDR (incl. Vientiane Capital), or Urban and rural districts in Tanzania[35]	**0.158**[36]	**0.229**
Rural districts only	-	**0.110**
Urban districts only	-	**0.225**

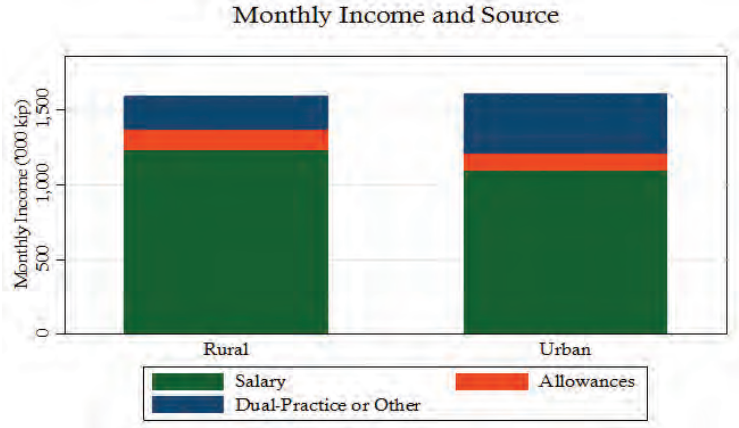


[34] Munga, et al. (2009).
[35] Tanzania has 169 districts and a national population of 49 million (≈290,000 per district); Lao PDR has 17 provinces including Vientiane municipality and a national population of 6.8 million (≈400,000 per province).
[36] Author's calculations. Data source: Department of Organization and Personnel, Ministry of Health, Lao PDR (2012).

2.4 Health Center Workforce Income

11. Mean monthly income of HC workers, including allowances and other income, is 1,599,000 kip (or 149 percent of monthly prorated GNI per capita,[37] or 123 percent excluding other income), comprising 1,187,000 kip as salaries, 131,000 kip as allowances, and 282,000 kip as other income (including dual-practice). Excluding other sources of income, this is close to the national mean compensation for civil servants in the health sector of 1,290,000 in 2012 and is approximately four times per capita households consumption in 2012-13 (mean household size in Lao PDR is 5.2[38]), although in some Sub-Saharan countries, salaries are thirty to forty times GNI per capita.[39] Although HC workers from rural and urban areas have very similar total incomes (Figure 12), the composition is different – with rural workers tending to have higher salaries but lower supplementary sources of income, compared with urban workers.

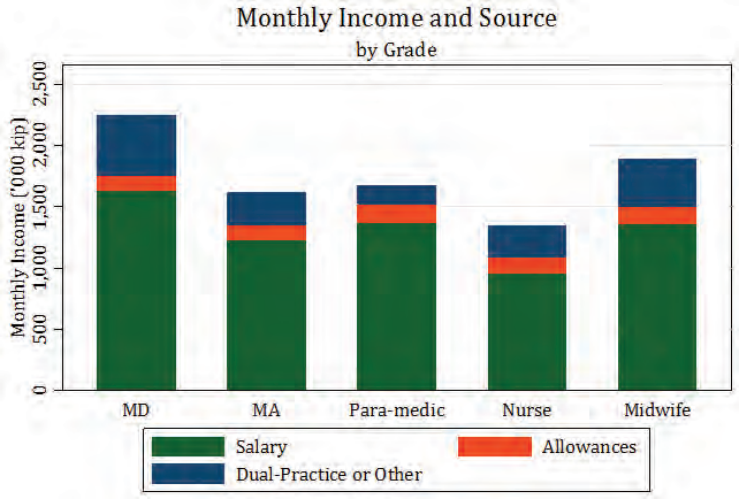
Figure 12: Monthly HC worker income and source, by location



[37] WDI, 2014.
[38] LSIS, 2012.
[39] McCoy, David, Sara Bennett, Sophie Witter, Bob Pond, Brook Baker, Jeff Gow, Sudeep Chand, Tim Ensor, and Barbara McPake (2008). "Salaries and Incomes of Health Workers in Sub-Saharan Africa." *The Lancet*, 371 (9613): 675–81.

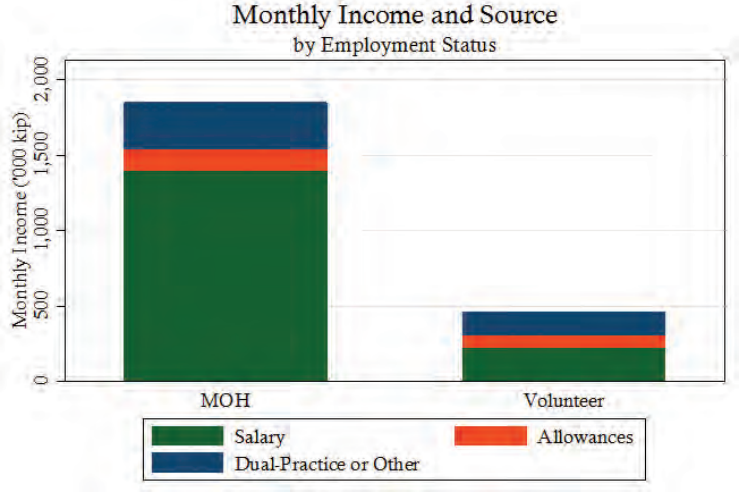
12. Among the different grades of health workers, medical doctors have the highest salaries and nurses have the lowest salaries, although the overall picture is of a highly compressed salary scale which may indicate directions for reforms (Figure 13). Allowances and supplementary sources of income were significant contributors to total income.

Figure 13: Monthly HC worker income and source, by grade



13. The situation was less equitable when it comes to different employment statuses, as HC volunteers took home less than one-third of the total income of a HC civil servant (Figure 14). 'Salaries' for volunteers were comparable in quantum to their income from supplementary sources.

Figure 14: Monthly HC worker income and source, by employment status

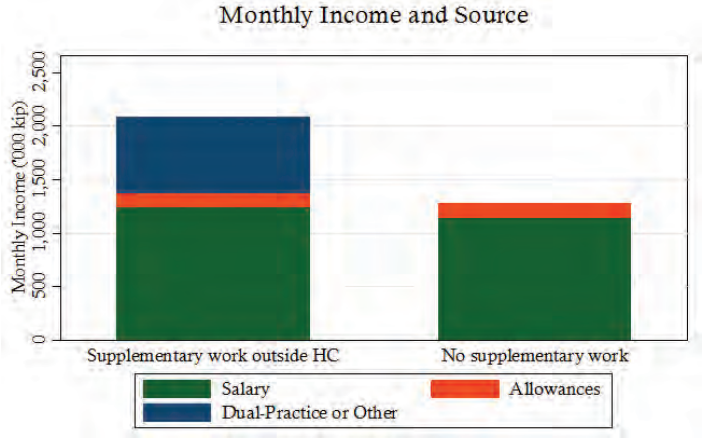


Box 3: Dual-practice and Supplementary Income

Almost half of HC workers (40 percent) had a supplementary source of individual income (not including income from other members of the household) outside the HC. Uniquely for Lao PDR, less than 2 percent were involved in health-related dual-practice even though there is no legal block on additional private work which takes place outside public sector working hours.[40] This contrasts with other countries in the region where dual-practice is described as 'ubiquitous' in Cambodia where 90 percent of the income of dual practitioners is 'from private work'. In Indonesia, '70 percent of publicly employed puskesmas physicians' are dual-practitioners, and in Vietnam, '84 percent of public health staff' are dual-practitioners.[41] Although there is no empirical evidence available to confirm this, the relatively low rates of health-related dual-practice in Lao PDR could be due to weak demand for private primary care services in the rural areas, and hence, almost all sources of supplementary income are from agricultural activities and/or small enterprises.

HC workers reported that the main reason for seeking additional income sources was due to inadequate income (88 percent), although the baseline salary and allowances profile for HC workers with and without supplementary income is similar (Figure 15). Among those with supplementary income, the mean monthly supplement was 712,000 kip. The average time spent on work outside the HC was 12.9 hours per week.

Figure 15: Monthly HC worker income and source, for workers with and without a supplementary source of income



[40] And meets the requirements of the Health Care Law (2005).
[41] World Health Organization et al. (2013). "Dual Practice by Health Workers in South and East Asia: Impact and Policy Options." http://iris.wpro.who.int/handle/10665.1/5284.

2.5 Health Center Workforce In-Service Training

14. Almost half (44 percent) of HC staff had never undergone any in-service training (Figure 17), and only 40 percent underwent any training in the last one year. The three most common training topics provided were on (i) Nutrition and Growth Monitoring, (ii) Family Planning, and (iii) Antenatal and Postnatal Care (Table 16). Urban-rural differences were small – with urban HC workers reporting that 46 percent had never undergone any in-service training, compared with 42 percent for rural HC workers.

15. Training investments on critical topics even for staff directly involved in providing such critical services was inadequate – for example, 67 percent of HC staff who conducted a facility delivery in the last three months, had never received in-service training on Basic and Essential Obstetrics and Newborn Life Savings Skills (BEONLSS) (Figure 17). Similarly, 67 percent of staff who treated a patient for malaria in the last three months, had never received in-service training on malaria.

Figure 16: In-service training provided in the last year

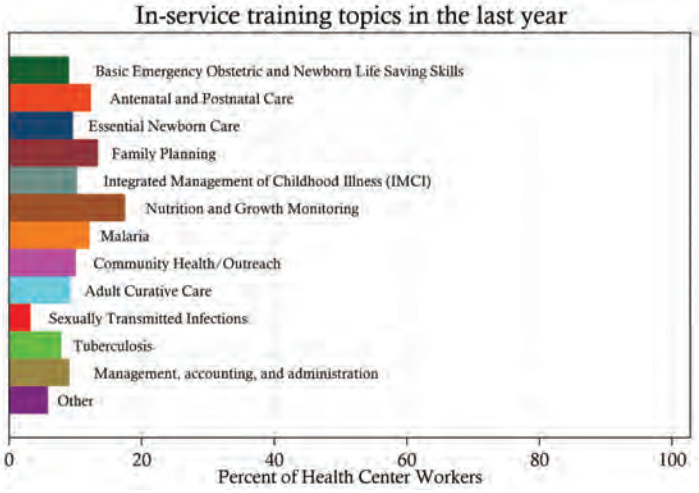
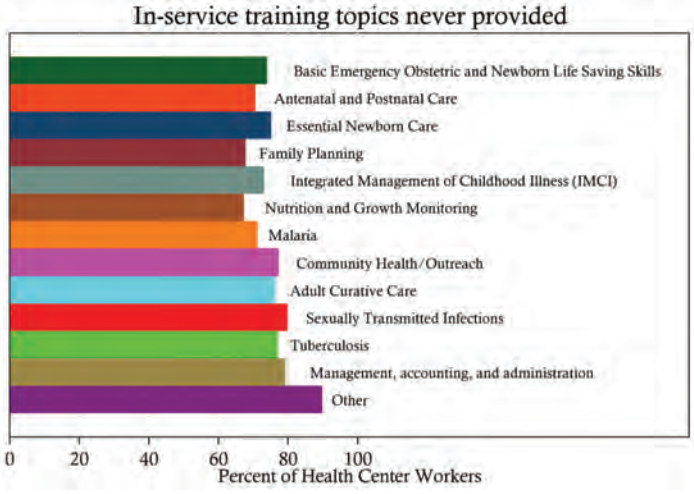


Figure 17: In-service training never provided



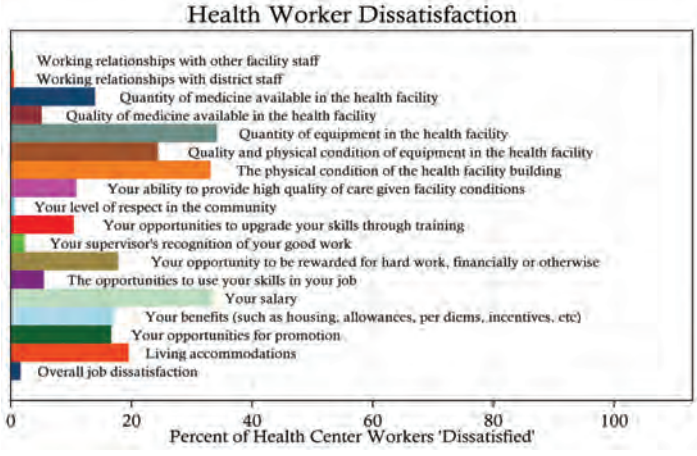
2.6 Health Center Workforce Satisfaction

16. Most health workers expressed overall satisfaction with their work, especially with regard to work and community relationships (Figure 18). That these aspects are valued and lead to health worker satisfaction should not be underestimated by health policymakers, as it is important to preserve and to protect the 'right' reasons for work performance and motivation.

Figure 18: Factors for HC worker satisfaction

17. However, service readiness (the availability of medicines, equipment, and health facility infrastructure) and compensation (salary, benefits, and opportunities for promotion) are the main sources of dissatisfaction (Figure 19). This highlights the added value of investments in service readiness, beyond only improving service readiness, but in improving job satisfaction. The finding of dissatisfaction over salaries is consistent with other studies.[42]

Figure 19: Factors for HC worker dissatisfaction

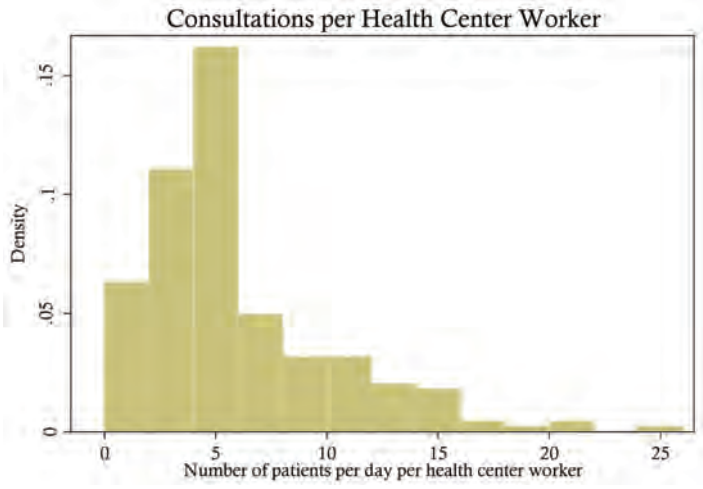


[42] Khamlub et al. (2013). "Job Satisfaction of Health-Care Workers at Health Centers in Vientiane Capital and Bolikhamsai Province, Lao PDR." *Nagoya Journal of Medical Science*, 75 (3-4): 233–41.

2.7 Health Center Workforce Productivity and Efficiency

18. HC workers in Lao PDR were underutilized, with a mean of only 5.6 consultations per HC worker per day (median 4), despite working a median of 40 hours a week, five days a week (mean is 54.6 hours and 5.4 days respectively) (Figure20). By contrast, in rural Tanzania, the median number of consultations per day per health worker was 14.[43] Hence, even though HC workers only received modest compensation, the implied unit cost of labor per consultation was relatively high at 13,500 kip.[44]

Figure 20: Consultations per HC worker per day



19. Part of the underutilization of HC workers may be attributed to the maldistribution of health workers in rural and remote areas in Lao PDR, but given that outpatient utilization is low in Lao PDR nationally (0.44 outpatient consultations per capita per year in 2012),[45] demand-side aspects such as health seeking behaviors, perceived quality concerns, financial, physical, cultural, and other barriers, will need also to be addressed. The irony of relative underemployment despite the scarcity of Lao health workers due to low utilization of health services attributed to demand-side factors has been noted before.[46]

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[43] Soucat, Agnes, Richard Scheffler, and Tedros Adhanom Ghebreyesus, eds (2013). *The Labor Market for Health Workers in Africa: A New Look at the Crisis*, The World Bank. http://elibrary.worldbank.org/doi/book/10.1596/978-0-8213-9555-4.

[44] In this sample, health center workers from all grades and positions reported seeing patients, and hence are included in the analysis.

[45] *Health Management Information System 2011-2012*, Lao PDR MoH.

[46] Kanchanachitra et al. (2011).

20. Furthermore, despite the relative scarcity of health workers, health workers spent 15 percent of their time completing forms, reports, and other monitoring activities, a mean of 8.7 hours per week (Figure 21). Although there is some degree of underutilization of health workers, this administrative burden may still affect frontline service delivery as health workers who spend the most time on clinical work, especially medical assistants and midwives (Figure 22), are also the health workers who spend the most time on these administrative tasks. Medical assistants spend 10 hours per week on administrative tasks in addition to 54 hours per week spent on, or being available for, clinical work. Considering HC worker salaries, the implied cost of these monitoring activities is 341,000 kip per month per HC worker. In the context of an overall undersupply of health workers, the use of roughly one-seventh of health worker time to complete forms, reports, and other monitoring activities, may be unaffordable.

Figure 21: Usage of HC worker working time

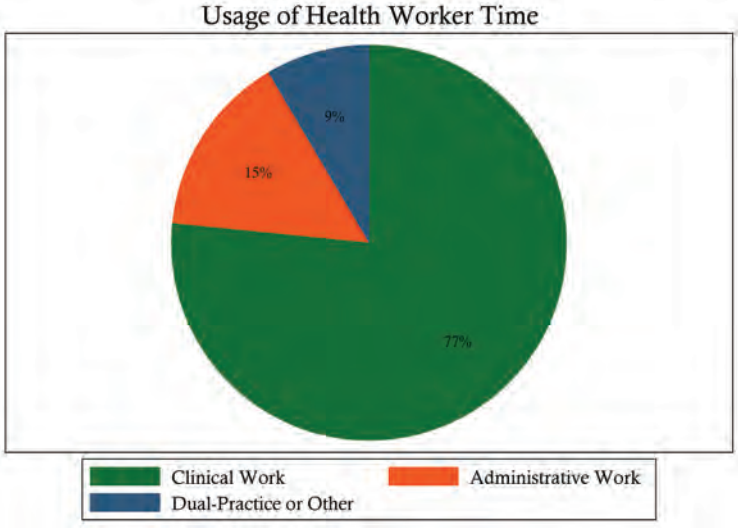
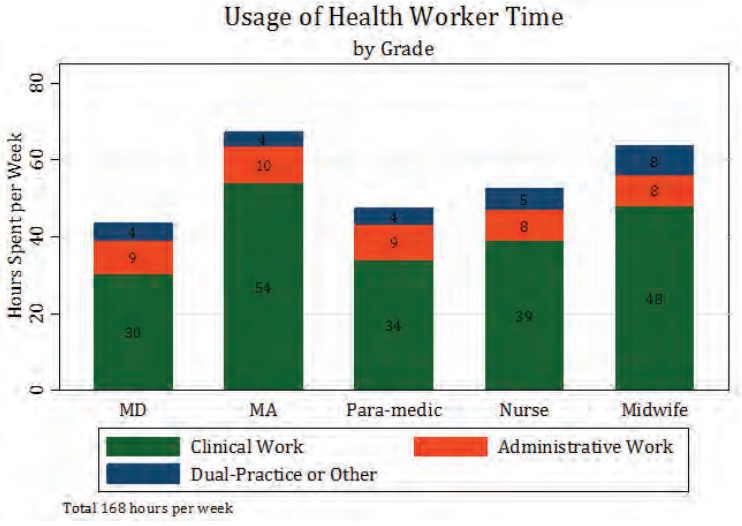


Figure 22: Usage of HC worker working time, by grade



Box 4: How efficient are HCs in Lao PDR?

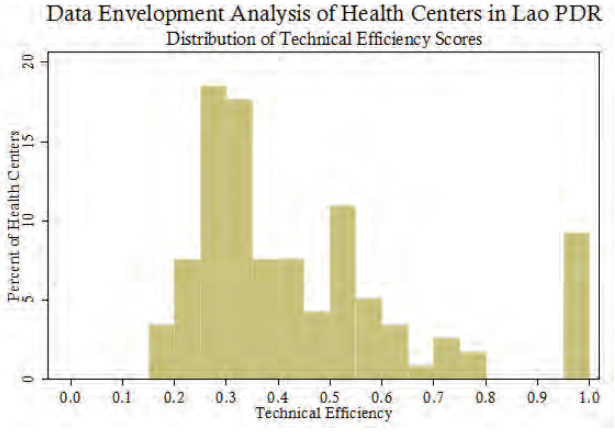
Data Envelopment Analysis (DEA)[47] is a commonly used method for analyzing the efficiency of health facilities, based on measured inputs and outputs. Due to data limitations for this analysis, the input used is the total number of HC workers, and the outputs are deliveries (both in the HC and by outreach), immunizations, and outpatient consultations, and inpatient discharges.

DEA of HCs surveyed found that HCs overall were operating at only a 45 percent level of efficiency, with rural HCs slightly outperforming urban HCs. These findings contrast with findings from DEA done in other countries – for example, in Kenya, the mean efficiency of public HCs is 0.73 while the mean efficiency for public district hospitals in Zambia is 0.63 (0.73 in private district hospitals), thus highlighting the significant scope for improvement in the efficiency of HCs in Lao PDR (Table 5). Further analysis on determining the scale efficiencies and the causes of inefficiencies are possible but beyond the scope of this report.

Table 5: Findings from DEA of lao HCs and comparators

Data Envelopment Analysis Statistics *0 = inefficient; 1=efficient*	Lao PDR HCs	Zambia district hospitals	Kenya public HCs[48]
Percent of efficient health facilities	**9**	40	56
Mean efficiency score	**0.45**	0.67	0.73
Median efficiency score	**0.38**	0.66	-
Standard Deviation	**0.22**	0.33	-
Least Efficiency Score	**0.18**	0.23	-
Mean efficiency score (rural HCs)	**0.47**	-	-
Mean efficiency score (urban HCs)	**0.41**	-	-
Mean efficiency score (public facilities)	**0.45**	0.63	0.73
Mean efficiency score (private and mission facilities)	-	0.73	-

Figure 23: Distribution of technical efficiency scores for HCs



[47] Masiye, Felix (2007). "Investigating Health System Performance: An Application of Data Envelopment Analysis to Zambian Hospitals." *BMC Health Services Research*, 7 (1): 58. doi:10.1186/1472-6963-7-58.

[48] Kirigia, Joses M., Ali Emrouznejad, Luis G. Sambo, Nzoya Munguti, and Wilson Liambila (2004). "Using Data Envelopment Analysis to Measure the Technical Efficiency of Public Health Centers in Kenya." *Journal of Medical Systems*, 28 (2): 155–66.

2.8 Health Center Workforce Ability

21. Based on an analysis of clinical vignettes applied to HC workers,[49] this survey finds that only 56 percent of HC workers would ask about breastfeeding, only 72 percent would ask about complementary feeding practices, and only 21 percent would ask about hygiene and sanitation during a consultation for a child for growth monitoring (Table 6). These are critical aspects of infant and young child feeding (IYCF) as the prevalence of stunting (44 percent of under-fives) and underweight (27 percent of under-fives) is very high in Lao PDR.[50] Although the causes for this are multisectoral, the health sector plays a role in providing nutrition advice and key commodities such as Vitamin A, deworming medicine, and iron supplements.

22. Most HC workers would weigh and measure the length/height of the child, and were able to correctly interpret the growth chart, but not many would then act on the implications of these findings - only about one-third of health workers would have then treat the child with Vitamin A or deworming medications, and 42 percent would have provided advice on hygiene and sanitation.

23. A further concern is that, in areas where health workers considered the prevalence of stunting to be higher than usual, these health workers tended to undertreat children, perhaps indicating an incorrect consideration that where stunting is common, it can be considered to be 'normal'.

24. Health workers who had experience providing child growth monitoring services in the last three months were associated with above average scores, and this association was confirmed in a basic regression model as detailed in Annex 1.

Table 6: Knowledge of nutrition as applied to a child growth monitoring visit

Nutrition	Percent of health workers with correct response, %				
	All	Health workers who provide child growth monitoring services	Health workers trained in Nutrition and Growth Monitoring	Growth monitoring guidelines available at health center	Health workers who consider stunting to be more prevalent in their area
Questions on breast feeding	56%	58%	52%	54%	51%
Questions on complementary	72%	72%	72%	68%	64%
Questions on sanitation practices	21%	23%	20%	21%	25%
Examination of weight	96%	98%	96%	96%	95%
Examination of length/height	93%	95%	93%	93%	95%
Correct interpretation of growth	98%	99%	99%	98%	98%
Treat with Vitamin A	35%	37%	42%	28%	30%
Treat with deworming	31%	32%	27%	28%	21%
Advise on sanitation	42%	46%	44%	40%	46%
Child development (walking)	75%	76%	66%	73%	73%
Aggregate scores (SDs from the Mean)	0.000	0.074	-0.042	-0.056	-0.089

[49] Methodology used is described in Box 5.
[50] LSIS, 2012.

25. Knowledge of routine immunizations among HC workers was fair overall, with more than three- quarters of HC workers aware of the recommended age for administering three of the four routine immunizations tested, but the application of WHO guidelines on when immunizations can or cannot be administered was weak (Table 7). Less than half of HC workers would have administered a vaccination to a child if the child had a mild fever, although WHO guidelines indicate that *'any minor illness, such as respiratory tract infections or diarrhea with temperature below 38.5 C'* is not a contraindication to immunization and hence the immunization should have been provided.[51] The availability of guidelines on immunization at the HC (85 percent have this available) appears to improve scores for this case.

Table 7: Knowledge of immunizations and the immunization schedule

Immunizations	Percent of health workers with correct response, %				
	All	Health workers who provides immunizations	Health workers trained in Nutrition and Growth Monitoring	Immunization guidelines available at health center	Health center has above median provision of immunization services
BCG	79%	80%	82%	79%	80%
DPT1	76%	76%	69%	76%	76%
HepB1	60%	60%	56%	62%	58%
MSV1	95%	95%	94%	94%	94%
Mild fever and vaccinations	46%	46%	47%	47%	47%
Aggregate scores (SDs from the Mean)	0.000	0.013	-0.072	0.025	-0.004

26. Knowledge of basic treatment of severe dehydration in a child with diarrhea with intravenous fluids and oral rehydration salts was reasonable. More than three-quarters of HC workers would have administered these given the scenario (Table 8), interventions which could have contributed towards reducing the high under-five mortality rates in Lao PDR which was 71 per 1,000 live births.[52] The availability of Integrated Management of Childhood Illnesses (IMCI) guidelines appeared to improve scores but HC workers who received the current method of training on IMCI appeared to have performed more poorly than average.

The administration of antibiotics (either oral or injectable) in this situation was judged to be an inappropriate intervention by Delphi consensus, but was nevertheless mentioned by a small percentage of health workers.

[51] WHO (2004). Immunizations in practice.
[52] WDI (2013).

Table 8: *Knowledge of IMCI as* applied to diarrhea with severe dehydration

IMCI	Percent of health workers with response, %			
	All	Health workers who provides child curative care services	Health workers trained in IMCI	IMCI guidelines available at health center
Provides IV fluids	78%	78%	72%	81%
Provides ORS	75%	76%	63%	76%
Administers oral antibiotic (Judged inappropriate by Delphi consensus)	8%	8%	12%	8%
Injectable antibiotic (Judged inappropriate by Delphi consensus)	2%	2%	1%	2%
Aggregate scores (SDs from the Mean)	0.000	0.004	-0.121	0.036

27. Knowledge of basic treatment for a woman bleeding after childbirth was poor. Maternal mortality rates are 220 per 100,000 live births and postpartum hemorrhage (bleeding after childbirth) is the most common cause of death.[53] Only two-thirds of HC workers would administer intravenous fluids and fewer than 10 percent would perform basic maneuvers (which require neither drugs nor equipment) to reduce bleeding, such as uterine massage and bimanual compression (Table 9). Fewer than half would treat with oxytocin (a fraction which does not seem to be dependent on whether or not stocks of oxytocin are available), a critical intervention, and only 58 percent would refer the woman to hospital if she had continued bleeding. These findings are very disconcerting, especially as neither the current method of training nor the availability of guidelines appear to improve scores, but are consistent with an earlier assessment of skilled birth attendants in Lao PDR commissioned by UNFPA, with all cadres – high-, mid-, and low-level – scoring poorly on a problem solving scenario involving recognizing and treating shock due to hemorrhage.[54]

[53] WDI (2013).
[54] MoH and UNFPA (2008). *Assessment of Skilled Birth Attendance in Lao PDR*, Vientiane,.

28. Experience appears to be an important factor in improving scores. HC workers who have experienced a similar postpartum hemorrhage case before and those from HCs which are above the median in the number of deliveries conducted score better. However, in a basic regression model (as detailed in Annex 1), training appears to be negatively associated with scores.

Table 9: Knowledge of integrated management of pregnancy and childbirth (IMPC) as applied to postpartum hemorrhage

IMPC	Percent of health workers with correct response, %						
	All	Health workers who conduct deliveries	Health workers trained in IMPC/BEON LSS	IMPC/BEON LSS guidelines available at health center	Health center has above median provision of delivery services	Health workers who have seen a similar obstetric case in the past	Health centers which have stock of oxytocin
Early treatment: IV fluids	66%	64%	55%	68%	67%	59%	69%
Early treatment: uterine massage	7%	8%	10%	6%	7%	9%	7%
Early treatment: Bimanual uterine	6%	6%	9%	7%	4%	11%	6%
Early treatment: Oxytocin	43%	48%	42%	44%	47%	48%	44%
Early treatment: Ergometrine	2%	2%	0%	3%	3%	0%	2%
Appropriately timed referral to	58%	59%	59%	57%	57%	60%	59%
Aggregate scores (SDs from the Mean)	0.000	0.039	-0.266	-0.006	0.056	0.056	0.001

29. In terms of scores by position within the HC, HC heads performed the best overall and deputy HC heads performed the worst, especially in the case for child growth monitoring and the diarrhea with severe dehydration case (Table 10).

30. By grade, medical assistants, who are the largest single cadre by grade and comprise 37 percent of all HC staff, performed the worst, especially for the postpartum hemorrhage case and the child growth monitoring case. Midwifery professionals performed better on the postpartum hemorrhage case, but unsurprisingly did not perform well on cases they were not explicitly trained for such as diarrhea with severe dehydration. Medical doctors appear to have performed the best compared to all other grades although the number of medical doctors in the sample was small.

31. There are no significant performance differences between male and female HC workers but rural HC workers appear to underperform relative to urban HC workers. HC workers with more years of experience since graduation, perhaps reflecting an earlier generation of training, appear to perform less strongly, but HC worker satisfaction appears not to have much impact on scores.

32. The total number of health workers in an HC is strongly associated with better provider ability scores based on a basic regression model (Annex 1), meaning that health workers with more colleagues performed better than those with fewer colleagues. Using the same model, health workers in HCs at higher elevations (above sea level), which in the Lao PDR context is a measure of isolation, performed worse than those at lower elevations.

Table 10: Provider ability scores[55] heat map

Normalized Composite Scores (Standard deviations from the mean score)	Child Growth Monitoring Visit	Immunizations	Diarrhea with Severe Dehydration	Post-partum Hemorrhage	Combined
Position					
Head of Health Center	0.076	0.011	0.156	-0.002	0.060
Deputy Head of Health Center	-0.235	0.060	-0.308	-0.199	-0.170
Maternal and Child Health	-0.002	-0.004	0.047	-0.014	0.007
Revolving Drug Fund	0.043	-0.009	-0.157	0.049	-0.019
Nurse Assistant	0.072	-0.137	0.156	0.141	0.058
Grade					
Medical Doctor	0.458	0.233	0.773	0.442	0.477
Medical Assistant	-0.278	-0.163	-0.157	-0.323	-0.230
Para-medic	0.356	-0.296	0.286	0.466	0.203
Nursing Professionals	0.064	0.130	0.026	0.071	0.073
Midwifery Professionals	0.128	0.144	-0.101	0.157	0.082
Others Dimensions					
Female Health Center Workers	-0.067	0.122	-0.109	0.008	-0.011
Rural Health Center Workers	-0.126	-0.037	-0.069	-0.117	-0.087
Above Median Years of Experience	-0.006	-0.031	-0.070	-0.052	-0.040
Mid and High Level Degree holders	0.073	0.069	0.094	0.110	0.087
Above Median Satisfaction Index	0.081	-0.068	0.020	0.065	0.025
	WORST		AVERAGE		BEST

[55] Composite scores and aggregated scores are explained in further detail in Box 5, but in simple terms: a score of zero is the mean score, positive scores are better than the mean, and negative scores are worse than the mean.

Box 5: Method used for analyzing HC workforce ability

In order to measure provider ability in this survey, four cases were chosen reflecting the health priorities of Lao PDR, namely maternal health, child health, and nutrition. The four cases used were (i) a routine growth monitoring visit, (ii) routine childhood immunizations, (iii) a child with diarrhea and severe dehydration, and (iv) a delivery complicated by postpartum hemorrhage. National and international guidelines were consulted in order to construct the case and potential responses, in a contextualized manner. In order to determine whether responses were correct or incorrect, an expert panel comprising Lao PDR Ministry of Health central staff from the relevant department such as the Maternal and Child Health Center and the National Nutrition Center, and district-level staff was convened.

The Delphi consensus method was then used to query the panel to determine, given the local Lao context, whether potential responses to each question were (i) critically important life-saving interventions, (ii) correct interventions, (iii) neutral interventions with neither harmful nor beneficial effects, (iv) harmful interventions which may impact the patient negatively, (v) life-threatening interventions which may result in the death of the patient. Health worker responses were then scored against the expert panel consensus for each of the questions. In addition, composite scores were generated by weighting the individual responses[56] and normalizing the total score for each of the four cases such that the scores are presented as standard deviations from the mean derived separately for each case.

A composite score of zero '0' (yellow color) means that a health worker received the average (mean) score for all health workers for that particular case. A composite score of '-1' (orange-red color) means that the health worker scored one standard deviation below (worse) the average (mean) score for all health workers for that particular case; while a composite score of '+1' (green color) means that the health worker scored one standard deviation above (better) the average (mean) score for all health workers.

As there are four cases, a further measure – the 'combined' score – is an arithmetic unweighted mean composite score of all four cases.

In addition, basic econometric models were used to regress outcomes scores for vignettes with factors such as training received, availability of guidelines, experience, health worker demographics, and HC characteristics. Findings from these are consistent with intuitions from the tabulations of scores provided earlier, and detailed findings are available in Annex 1.

[56] The weights are as follows: +5 for mentioning a critically important intervention, -1 for omitting to mention a critically important intervention; +3 for mentioning a correct intervention; -1 for mentioning a harmful intervention; -2 for mentioning a life-threatening intervention.

3. Key Recommendations

Lao PDR is a sparsely populated, mountainous, and land-locked country, with a diversity of ethnicities and languages, and weak land transport infrastructure, thus posing an inherent service delivery challenge, especially with regard to HRH. This study finds that the per capita density and distribution of critical HRH was low and inequitable, although this occurred in the context of extremely low utilization of health services, which means that the productivity of health workers was also low. Improving clinical ability, for which there is some evidence of a positive association with health worker experience and with HC staff working in large lowland health centers, is hence a major challenge.

In terms of informing broader HRH policy, the HC survey data used here is limited by the non-inclusion of (i) private providers, (ii) secondary and tertiary health facilities, (iii) other cadres, notable village-level agents, and managerial, administrative, and support staff. With these limitations in mind, we would like to make the recommendations below, based on the empirical findings from this public HC worker survey.

1. Conduct and act on an effective strategic review of the distribution of frontline HRH nationally. Considering the geographic, socioeconomic, and ethnolinguistic context of Lao PDR, HRH policies and implementation are noted to be particularly challenging in Lao PDR and this is acknowledged. Nevertheless, there are opportunities to address the significant inefficiencies in health service delivery related to the maldistribution (geographic, level, and type) and underutilization of frontline human resources, using fiscally neutral solutions. Although this review should be conducted at the national-level, the role and relevance of provincial-level stakeholders is critical to ensure buy-in and the inclusion of local considerations.

The terms of reference for this review should include (i) taking stock of the current supply and production of HRH, (ii) assessing, with adequate geographic granularity, population health needs (not just short term current demand) and utilization patterns at a subdistrict level, (iii) taking note of the infrastructure and networks for referrals (with particular focus on obstetric emergencies), (iv) taking into consideration ethnolinguistic and gender inclusivity and sensitivity, and (v) based on these, to make an objective determination of where the current and future supply (numerically, and by type and level) of HRH should be concentrated, in view of its scarcity. This may include necessitating the consolidation of HCs in extreme cases where they are too thinly spread or fragmented to be effective – with the key concern being the demonstration in this study that low utilization and few opportunities for experiential learning in isolated HCs health is associated with poor clinical ability in managing emergencies – in addition to efficiency considerations. Any such consolidation must be preceded by investments in strengthening community-level referral systems and an active program of outreach (beyond a uniform policy of quarterly visits only), which leverages and empowers village-level health agents (such as village health volunteers and/or village health workers.

This strategic review will need a sufficiently powerful political mandate such that potentially unpopular recommendations, which may include the closure and relocation of some HCs, and the relocation and retraining of health staff, can be followed through. Nevertheless, some flexibility would be needed to allow transitions to occur over a fair amount of time, perhaps linked to overall investment plans for health facilities and linked to overall career development plans for health staff. In addition, an appropriate consultative process for local stakeholders will be needed to ensure that all relevant information and concerns are taken into consideration through the process.

This distributional review can be complemented by related HRH reviews such as the *Reproductive, Maternal, and Neonatal Health Workforce Assessment* used elsewhere,[57] to provide a model for projecting and costing various HRH development strategies.

2. Leverage the vast opportunities to improve training programs and supervision. This survey finds substantial gaps in the clinical abilities of frontline health workers in the management of MDG-related clinical situations, and highlights a significant gap in the quality of health education beginning at the pre-service stage (including entry regulations/requirements for health workers) and continuing throughout the professional life of the health worker.

Firstly, the delivery of in-service training needs to be improved as there is evidence that HC workers who received in-service training performed worse than those who didn't, and that health workers scored best on questions which relate to a repetition of facts (for example, immunization schedules) rather than an application of principles (for example, administration of vaccines in a child with a mild fever). Furthermore, even though HC workers were able to correctly identify the problem of undernutrition in a child, they did not follow through with the appropriate treatment actions.

Secondly, the mode of learning should emphasize experiential and practical forms of pedagogy, as there is evidence that prior and recurring experience is associated with better scores. Given the team nature of HCs (and indeed individuals in larger HC teams had better scores), health workers should be encouraged to consult with and learn from one another through mutual mentoring. The existing mechanism for supportive supervision can be leveraged further, to specifically enable (and make supervisors accountable for) mutual mentoring.

Thirdly, greater contextualization and orientation of training materials to the Lao PDR context is needed, in order to address the specific weaknesses and gaps in Lao PDR. For example, specific weaknesses and knowledge gaps have been identified in clinical cases involving nutrition and maternal health emergencies. Certain weaknesses in performance may even be due to a dilution of standards to the local norms – for example, there is some evidence that health workers would undertreat undernourished children, where they perceive that the children are from a community with above average stunting prevalence. Direct translations of international guidelines to the Lao language would alone not be able to address such cognitive biases.

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[57] Chilvers R., P. Van Look, P. ten Hoope-Bender (2014). *RMNH Workforce Assessment 2014*. MOHFW Bangladesh, UNFPA, ICS Integrare. Barcelona, Spain

Fourthly, the selection and matching of staff for in-service training can be improved. HC workers who were providing critical services such as malaria treatment and delivery services, were more often than not HC staff who had never received in-service training on these topics. In larger HCs which serve larger catchment populations, specialization between staff may be helpful in order to improve quality. Prioritization of rural HC staff for in-service training should also be considered, as these had below average scores in general on all four of the clinical cases used, once in-service training programs are improved. District and provincial stakeholders should be empowered to play a critical role in planning HRH training, and be held accountable for this.

3. **Invest in reducing demand-side barriers** such as physical access barriers, ethnolinguistic and gender barriers, and financial barriers, in order to increase the utilization of essential health services, as underutilization in rural areas is a substantial driver of health workforce inefficiencies in HCs. This will involve a combination of interventions (beyond the scope of this policy note) including community-based initiatives to address health seeking behaviors and cultural barriers, and health financing interventions to reduce financial barriers. HRH-related interventions in order to improve linguistic concordance and gender sensitivity will also be required, for example, by targeted recruitment of ethnic groups and deployment back to their communities, and allowing pregnant women more choice on the gender of those providing maternity services.

4. **Invest in improving the service readiness of public health facilities.** The share of public expenditure on HRH as a fraction of general government health expenditure in Lao PDR is already well within global and regional norms, although inadequate headcounts are noted. Hence, in the near term, further investments to ensure the availability of essential health commodities, equipment, and infrastructure in order to improve the service readiness of HCs should be prioritized, as the lack of these are noted to be just as much (if not more) a source of HC worker dissatisfaction as salary is. The supply-side readiness of HCs to provide maternal health services has been previously noted to be low.[58] Hence, such investments will have the synergistic effect of improving both health worker satisfaction as well as improving the technical readiness of health facilities to provide quality health services which improve health outcomes.

[58] World Bank (October 2013). *Maternal Health Out-of-Pocket Expenditure and Service Readiness in Lao PDR: Evidence for the National Free Maternal and Child Health Policy from a household and health center survey.*

Annexes

Annex 1: Regressions

For each of the four cases – nutrition, immunizations, curative child health (IMCI), and obstetrics (IMPC) – a basic regression model was used, with the normalized case score as the dependent variable and independent variables as detailed in Table 11. In addition, Table 12 contains results from another basic regression model with the normalized combined case scores as the dependent variable. Notable findings are the strength of associations with markers of the degree of isolation and size of HCs. Health workers working in large HCs with many health workers in lowland environments scored significantly better than average

Table 11: Clinical vignette-specific scores

Dependent Variables	Nutrition Score	Immunization Score	IMCI Score	Obstetrics (IMPC) Score
Recent (last 3 months) Relevant Experience	0.583**	0.2	0.118	0.218
	0.19	0.25	0.29	0.16
Relevant Guidelines Available	-0.116	0.192	-0.037	-0.027
	0.15	0.18	0.16	0.17
Relevant In-Service Training Received *(at any time)*	-0.1	-0.091	-0.147	-0.331*
	0.14	0.14	0.15	0.16
Oxytocin Available				0.032
				0.17
Age (ln)	0.241	0.436	-0.006	0.348
	0.28	0.29	0.29	0.29
Education *(Mid or High-level degree holders)*	0.33	0.446*	0.405*	0.508**
	0.17	0.18	0.18	0.17
Urban	0.380**	0.115	0.174	0.283*
	0.13	0.14	0.14	0.14
Constant	-1.604	-2.205*	-0.399	-0.147
	1.07	1.09	1.09	0.25

* p<0.05, ** p<0.01, *** p<0.001 ~ Standard Errors reported in italics

Table 12: Combined scores

Dependent Variables	Model 1	Model 2	Model 3
Years of Experience	-0.013	-0.013	-0.009
	0.01	*0.01*	*0.01*
Age (ln)	0.268	0.501	0.303
	0.35	*0.34*	*0.34*
Education	0.315	0.324*	0.287
(Mid- or High-level degree holders)			
	0.16	*0.15*	*0.15*
Urban location	0.244*	0.290*	0.21
	0.12	*0.12*	*0.12*
Satisfied	-0.032	-0.02	-0.028
(Satisfied with 12 or more of 18 indicators of satisfaction)			
	0.12	*0.11*	*0.11*
Male Sex	-0.066	0.003	0.035
	0.12	*0.12*	*0.11*
Monthly Income from HC (ln)	0.171*	0.104	0.096
	0.07	*0.07*	*0.07*
Hours Worked per Week (ln)	-0.075	-0.093	-0.061
	0.08	*0.08*	*0.08*
Elevation above sea level (m)		0.001***	0.001***
		0	0
Total HC Workers			0.076**
in the health center			
			0.02
Constant	-0.798**	-1.178***	-3.080*
	0.27	*0.28*	*1.33*

* p<0.05, ** p<0.01, *** p<0.001 ~ Standard Errors reported in italics

Annex 2: Service availability and readiness assessment (SARA) – health facilities survey part B

Service Availability and Readiness Assessment (SARA)

Health Facility Survey Part B
(Provider Ability Module)

DISTRICT NAME	DISTRICT CODE	HEALTH CENTER NAME	HC CODE

(From Part A Staff Roster, as determined by health worker sampling methodology)

HEALTH WORKER ROSTER NUMBER	NAME OF HEALTH WORKER

RESULT OF THE INTERVIEW

INTERVIEW DONE & CONSENT GIVEN	01
PARTIALLY COMPLETED & CONSENT GIVEN	02
PERSON SAMPLED REFUSED INTERVIEW	03
PERSON SAMPLED CANNOT BE FOUND AFTER 3 VISITS	04
OTHER, SPECIFY:	96

INTERVIEWER	CODE

	DAY	MONTH	YEAR
VISIT 1			2013
VISIT 2			2013
VISIT 3			2013

MAIN LANGUAGE USED DURING INTERVIEW

BY INTERVIEWER	CODE
BY RESPONDANT	CODE

Translator Used?

NEVER	01
SOMETIMES	02
ALWAYS	03

SUPERVISOR	CODE	DAY	MONTH	YEAR
				2013

DATA ENTRY OPERATOR	CODE	DAY	MONTH	YEAR
				2013

Instructions: Ensure that a ***private area*** *is used for this interview and that there is* ***no one else present*** *except you (the interviewer) and the respondent. Please read the following:*

The objective of this survey is to inform decision making regarding capacity buidling policies for health workers in the public sector. The information you provide is confidential. It will only be used for research purposes. Health workers are selected randomly so that the sample is representative of professionals in the health sector. Your feedback, openness, and frankness are important as a representative of medical health professionals. Interviews take approximately 45 minutes. Your participation is voluntary and you can withdraw from the survey after having agreed to participate. You are free to refuse to answer any question that is asked in the questionnaire. If you have questions about this survey you may ask me or contact my supervisor. The choice to take part will have no bearing on your job. Your refusal to answer any particular question also likewise will have no bearing on your job.

At this point, do you have any questions about the study? Do I have your agreement to proceed?

INTERVIEWER'S SIGNATURE INDICATING CONSETNT OBTAINED	DAY	MONTH	YEAR
			2013

(1)	General Information			RECORD RESPONSE
0.01	*Instructions:* Record the time in HH:MM at the start of the interview.			
(1.01)	**What is your employment status?**	Ministry of Health Employee	01	
		Volunteer	02	
		Donor-Financed	03	
		Other	96	
(1.02)	**What is your grade?**	Medical doctors	01	
		Medical assistants	02	
		Non-physician clinicians/paramedical professionals (e.g., pharmacists or lab technicians)	03	
		Nursing professionals	04	
		Midwifery professionals	05	
		Other, specify:	96	
(1.03)	**What is your position within this health center?**	Head of Health Center	01	
		Deputy Head of Health Center	02	
		Maternal and Child Health	03	
		Drug Revolving Fund	04	
		OTHER: _____	96	
		REFUSE	97	
		DON'T KNOW	98	
(1.04)	**What is your age?**		COMPLETED YEARS	
		REFUSE	97	
		DON't KNOW	98	
(1.05)	**Which languages are you able to use to communicate with your patients?** RECORD CODE	1st language		
		2nd language		
		3rd language		
		4th language		
		5th language		
(1.06)	**What is the highest level of school you have completed?**	No education	00	
		Pre-school	01	
		Primary Grade 1	11	
		Primary Grade 2	12	
		Primary Grade 3	13	
		Primary Grade 4	14	
		Primary Grade 5	15	
		Primary Grade 6	16	
		Lower Secondary 1	21	
		Lower Secondary 2	22	
		Lower Secondary 3	23	
		Lower Secondary 4	24	
		Upper Secondary 1	31	
		Upper Secondary 2	32	
		Upper Secondary 3	33	
		Upper Secondary 4	34	
		Basic Level Degree	41	
		Mid Level Degree	42	
		High Level Degree	43	
		University or Higher	44	
		OTHER: _____	96	
		REFUSE	97	
		DON'T KNOW	98	

(1.07)	**How many year(s) and month(s) have you been working after formal completion of your highest training?** 97 = REFUSE; 98 = DON'T KNOW	a.	COMPLETED YEARS		
		b.	COMPLETED MONTHS		
(1.08)	**How many year(s) and month(s) have you worked as a health worker at this facility?** 97 = REFUSE; 98 = DON'T KNOW	a.	COMPLETED YEARS		
		b.	COMPLETED MONTHS		
(1.09)	**In the past 3 months, have you done any of the following activities as a health worker of this facility?** *Instructions:* READ EACH OPTION ALOUD. FOR EACH OPTION, RECORD "1" IF THE HEALTH WORKER PROVIDED THE SERVICE AT LEAST ONCE IN THE PAST 3 MONTHS, "2" IF NOT.			**YES** = 1	**NO** = 2
		a	Curative consultation for children	1	2
		b.	Curative consultation for adults	1	2
		c	Family planning consultation	1	2
		d	Antenatal care consultation (ANC)	1	2
		e	Postnatal care consultation (PNC)	1	2
		f	Deliveries in facility	1	2
		g	Deliveries at home	1	2
		h	Tuberculosis diagnosis/treatment	1	2
		i	Vaccinations	1	2
		j	Growth monitoring /Nutrition counselling	1	2
		k	Malaria treatment	1	2
		l	Outreach	1	2
		x	Other, specify: _____		

(2) Staff In-Service Training

Please read: **This section is to find out about in-service training that you may have received after undergoing professional medical, midwifery, or nursing education For each subject I mention, I would like to know the most recent time you received in-service training for that subject in question. Let me know if you received this training "LESS THAN 1 YEAR AGO", "MORE THAN 1 YEAR AGO", or if you were "NEVER TRAINED" in-service in this subject.**

Instructions: Read each subject out aloud and record the response codes.

	RESPONSES =	TRAINING LESS THAN 1 YEAR AGO	TRAINING MORE THAN 1 YEAR AGO	NEVER TRAINED	REFUSE	DON'T KNOW
(2.01)	Basic Emergency Obstetric and Newborn Life Saving Skills (BeON LS	1	2	3	7	8
(2.02)	Antenatal Care (ANC) / Postnatal Care (PNC)	1	2	3	7	8
(2.03)	Essential Newborn Care (ENC)	1	2	3	7	8
(2.04)	Family Planning	1	2	3	7	8
(2.05)	Integrated Management Children Illness (IMCI)	1	2	3	7	8
(2.06)	Nutrition and growth monitoring	1	2	3	7	8
(2.07)	Malaria	1	2	3	7	8
(2.08)	Community Health / Outreach	1	2	3	7	8
(2.09)	Adult curative care	1	2	3	7	8
(2.10)	Management of Sexually Transmitted Infections (STI)	1	2	3	7	8
(2.11)	Tuberculosis diagnosis and treatment	1	2	3	7	8
(2.12)	Management, accounting, and administration	1	2	3	7	8
(2.13)	Other, specify:	1	2	3	7	8

(3)	Hours and Compensation		RECORD RESPONSE
Please read: **This next section is about your work at the health center.**			
(3.01)	**In the last 7 days, how many days did you work at this facility?**	NUMBER OF DAYS IN THE LAST 7 DAYS. MAXIMUM 7. Don't Know/Refuse 998	
(3.02)	**In the last 7 days, how many hours did you work at this facility in total?**	NUMBER OF HOURS IN THE LAST 7 DAYS. MAXIMUM 168. Don't Know/Refuse 998	
(3.03)	**In the last 7 days, how many hours did you spend completing forms, reports, and other monitoring activities?**	NUMBER OF HOURS IN THE LAST 7 DAYS. MAXIMUM 168. Don't Know/Refuse 998	
(3.04)	**How many individual patients did you see on your last full working day?** INTERVIEWER: PLEASE DO NOT COUNT GROUP SENSITIZATION OF MOTHERS/PATIENTS	NUMBER OF PATIENTS Don't Know/Refuse 998	
(3.05)	**What is your current monthly net salary?** (kip)	KIP Don't Know/Refuse 99998	☐☐,☐☐☐,000
(3.06)	**Do you currently receive any of the following benefits as part of your primary job?** INTERVIEWER: READ OPTIONS ALOUD. FOR EACH OPTION, RECORD "1" FOR YES OR "2" FOR NO.	a. Housing/Dormitory b. Health care benefits and/or medicines c. Fuel d. Motorbike e. Bicycle	YES = 1 / NO = 2 1 / 2 1 / 2 1 / 2 1 / 2 1 / 2
(3.07)	**Do you normally receive a travel allowance for outreach activities or official meetings?**	YES 1 NO 2 ► (3.09)	
(3.08)	**In the last 6 months, how much did you receive as travel allowance for outreach activities or official meetings in kip?**	KIP Don't Know/Refuse 99998	☐☐,☐☐☐,000
Please read: **It is common for health workers to have additional work to their primary job at the health facility. I would like to ask you questions about additional work you might be doing. Please answer the following questions with regards to your supplemental activity.**			RECORD RESPONSE
(3.09)	**Do you have any other job or activity apart from this job at this health facility to supplement your income?**	YES 1 NO 2 ► (4.01) DON'T KNOW/REFUSE 8 ► (4.01)	
(3.10)	**What kind of job or activitiy is this?** INTERVIEWER: READ OPTIONS ALOUD. FOR EACH OPTION, RECORD "1" FOR YES OR "2" FOR NO.	a. Work in another government facility b. Work in private clinic or private practice c. Work in a pharmacy d. Farming x. Other, specify: _____	YES = 1 / NO = 2 1 / 2 1 / 2 1 / 2 1 / 2 1 / 2
(3.11)	**What is the main reason that you are doing this other job or activity?** (SA) INTERVIEWER: DO NOT READ OPTIONS ALOUD.	I CANNOT MAKE ENDS MEET ON MY PRIMARY INCOME 01 HOURLY PAY IS LUCRATIVE IN THIS SECONDARY JOB 02 I CAN GAIN EXPERIENCE THAT IS NOT AVAILABLE IN MY PRIMARY JOB. 03 THE SECONDARY JOB HAS A BETTER ENVIRONMENT 04 I CAN SEE PATIENTS I COULD NOT SEE DURING WORKING HOURS 05 OTHER, SPECIFY: 96 DON'T KNOW/REFUSE 98	
(3.12)	**How many hours did you spend on this other work in the last 7 days?**	HOURS IN LAST 7 DAYS Don't Know/Refuse 998	
(3.13)	**What was your monthly net income last month in this other work in kip?**	KIP Don't Know/Refuse 99998	☐☐,☐☐☐,000

(4) Health Worker Satisfaction

Please read: **In this part of the questionnaire, I would like to ask you some questions regarding your satisfaction with your current job. All answers are confidential. I am going to read you a series of statements about various aspects of your current job. For each of these aspects, please tell me whether you are satisfied, neither satisfied nor unsatisfied, meaning you are indifferent, or unsatisfied. Let me know also if you would prefer not to answer any of these questions.**

Instructions: Ensure that the interview is conduced in private with only the health worker and you present. Read each of he statements from 4.01 below and record the responses for each question. Do not show any emotion or reaction to any of the responses.

	RESPONSE CODE		RECORD RESPONSE =				
	SATISFIED	1					
	NEITHER SATISFIED NOR UNSATISFIED, I.E. INDIFFERENT	2					
	UNSATISFIED	3					
	REFUSE	7					
	DON'T KNOW	8	1	2	3	7	8
(4.01)	Working relationships with other facility staff		1	2	3	7	8
(4.02)	Working relationships with District/ Ministry of Health staff		1	2	3	7	8
(4.03)	Quantity of medicine available in the health facility		1	2	3	7	8
(4.04)	Quality of medicine available in the health facility		1	2	3	7	8
(4.05)	Quantity of equipment in the health facility		1	2	3	7	8
(4.06)	Quality and physical condition of equipment in the health facility		1	2	3	7	8
(4.07)	The physical condition of the health facility building		1	2	3	7	8
(4.08)	Your ability to provide high quality of care given the current working conditions in the facility		1	2	3	7	8
(4.09)	Your level of respect in the community		1	2	3	7	8
(4.10)	Your opportunities to upgrade your skills and knowledge through training		1	2	3	7	8
(4.11)	Your immediate supervisor's recognition of your good work		1	2	3	7	8
(4.12)	Your opportunity to be rewarded for hard work, financially or otherwise.		1	2	3	7	8
(4.13)	The opportunities to use your skills in your job.		1	2	3	7	8
(4.14)	Your salary		1	2	3	7	8
(4.15)	Your benefits (such as housing, allowances, per diems, incentives, etc)		1	2	3	7	8
(4.16)	Your opportunities for promotion		1	2	3	7	8
(4.17)	Living accommodations		1	2	3	7	8
(4.18)	Overall, how satisfied are you with your job?		1	2	3	7	8

(5) Staff Knowledge

Instructions: IMPORTANT!!! Please adopt a friendly attitude during this section and read the questions slowly and carefully for the health worker. Please do not react or show any emotion with regards to any of the answers given by the health worker. Do not show or allow the health worker to read this survey questionnaire sheet. Allow the health worker sufficient time to think of answers - do not rush them to the next question. It is acceptable to read a question again, for example if asked to by the health worker. However, the health worker should not be allowed to back track to answer an earlier question after the next question is read. The health worker should not be allowed to refer to any guidelines or documents during this interview. It is acceptable to clarify but not to prompt for the responses which are not supposed to be read out. For example, you could ask a clarifying question which does not use any of the words or phrases in the responses unless the health worker has already mentioned it.

Please read: **The following set of questions on knowledge is to assess the formal and informal training and supervision that you may have received. It is not intended to be an assessment of you or your abilities. This assessment will not affect your employment at this facility, nor does it affect your standing as a practitioner in this area. The findings will be kept confidential and will be analyzed collectively not individually. The purpose of these questions is to help the Ministry of Health obtain information on how to improve training of facility staff in the future. I will present you with situations that you might observe in the clinic. Please answer the questions to the best of your knowledge. As I am not medically trained, I will not be able to assess the quality of the answers and will be merely recording them down. I will also not be able to provide additional information on the situation beyond what is in the question. You have the right not to answer any of these questions, but I hope that you will try to answer so as to help the Ministry of Health improve training in the future. If you decline to answer any of these questions just let me know. Please also do not discuss this questions with any of your work colleagues as we may also ask them these same questions.**

0.02	*Instructions*: Please record the time in HH:MM			
(5.01)	**The first question is on immunizations. Do I have your agreement to continue?**	YES 1 NO 2 END INTERVIEW; SAY **THANK YOU**		
(5.02)	**When is the earliest recommended age that a child should receive the following vaccines?** *Instructions*: Please read out each of the vaccines. If the answer is given in hours - fill the hours section, weeks - fill the weeks section; if given in months - fill the months section. Do not convert. If a range is given - as for the earliest recommended age. 00 00 = AT BIRTH 98 98 = DON'T KNOW 97 97 = REFUSE *(REF: GoL Yellow Card)*	A. BCG		WEEKS MONTHS
		B. DPT first dose		WEEKS MONTHS
		C. Hep B first dose		HOURS WEEKS MONTHS
		D. Measles first dose		WEEKS MONTHS
(5.03)	**Imagine a mother brings in her 9 month old child for routine immunization. You find the child has a mild fever, a red throat, and a runny nose, but no other signs of illness. Should you give the immunization?** *(REF: WHO 2004 Immunization in Practice)*	YES 1 NO 2 REFUSE 7 DON'T KNOW 8		

Case Scenario 1

Please read: **Thank you very much for your answers. Now, please read this first case scenario which is about child health.**

Instructions: Please give the laminated case scenario card B5-1 to the health worker.

Please read: **You are working at a health center when Nok, a little girl aged 10-months and weighing 6.5kg is brought to the facility by her mother because she has had many episodes of diarrhoea for about three days. Nok hasn't eaten, drunk fluids, or breastfed since yesterday. When asked, her mother said that she did not vomit and does not have a fever. There is no blood in her stool. Nok appears weak and her eyes are sunken. You pinch the skin of the abdomen and the skin came back after three seconds.**

(5.04) **Your health center is well equipped and stocked with all essential medications. The nearest district hospital is one hour away. What would you do for Nok?**

Instructions: When the health worker stops mentioning further answers, ask again: **Is there anything else you would do for Nok?**

Instructions: Please do not read out the answers. If the health worker mentions answers which you are not sure how to code, please write it in the free form box below. Take time to look through all the responses to see if they are applicable before moving on to the next question. It is acceptable for the health worker to wait while you are doing this.

1 = MENTIONED
2 = NOT MENTIONED

LAST BOXES (X, Y, and Z)
0 = NO ANSWER
7 = REFUSE
8 = DON'T KNOW

(REF: WHO/UNICEF 2008 IMCI)

A	ASKS (ANY QUESTION)	1	2
B	EXAMINES PATIENT (ANY EXAMINATION)	1	2
C	GET HELP FROM COLLEAGUE	1	2
D	GET HELP FROM WRITTEN GUIDELINES	1	2
E	REFERS URGENTLY TO HOSPITAL	1	2
F	SEND THE PATIENT HOME	1	2
G	ADMINISTER AN INJECTABLE ANTIBIOTIC	1	2
H	ADMINISTER AN ORAL ANTIBIOTIC	1	2
I	ADVISE ON HOME TREATMENT OR WHEN TO RETURN TO FACILITY	1	2
J	INSERT IV LINE	1	2
K	ADMINISTER IV FLUIDS (E.G. NORMAL SALINE, RINGER'S LACTATE)	1	2
L	RECOMMENDS TO GIVE EXTRA FLUID TO DRINK	1	2
M	GIVE ZINC	1	2
N	GIVE OTHER VITAMINS OR SUPPLEMENTS	1	2
O	RECOMMENDS TO CONTINUE FEEDING	1	2
P	RECOMMENDS TO CONTINUE BREASTFEEDING	1	2
Q	GIVE ORS	1	2
S	REHYDRATE BY TUBE (NASO-GASTRIC OR MOUTH)	1	2
V	PROVIDE MISSED IMMUNIZATIONS	1	2
X	NO ANSWER	0	
Y	REFUSE TO ANSWER	7	
Z	DON'T KNOW	8	

FREE FORM BOX FOR OTHER RESPONSES:

(5.05) **Have you seen a similar case to this in real life?**

YES	1
NO	2
REFUSE	7
DON'T KNOW	8

Case Scenario 2

Please read: **Thank you very much for your answers. Now, please read this second case scenario which is about maternal health.**

Instructions: Please give the laminated case scenario card B5-2 to the health worker.

Please read: **Mrs Sy is 43 years old and has had 8 previous uncomplicated pregnancies and deliveries. No problems have been noted during antenatal check-ups for this pregnancy. She has just given birth to her 9th child in your health center half an hour ago. The baby is a 2.9kg girl and is well. However, after delivery of the placenta, you notice that the placenta is not complete. She is bleeding and has soaked her dress ("sinh"). She is pale and says that she feels weak. Her pulse is 130 beats per minute. You are unable to measure her blood pressure because the blood pressure cuff is leaking.**

(5.06)	**Your health center is well equipped and stocked with all essential medications. The nearest district hospital is one hour away.** **I will be asking you two questions about what you would do for Mrs Sy. The first is "What would you do for Mrs Sy in the first 30 mins?". I will then give you an update on Mrs Sy's progress and ask a second question on "What you would do next?".** **Let's start with the first question: What would you do for Mrs Sy in the first 30 mins?** *Instructions:* When the health worker stops mentioning further answers, ask again: **Is there anything else you would do for Mrs Sy in the first 30 mins?** *Instructions:* Please do not read out the answers. If the health worker mentions answers which you are not sure how to code, please write it in the free form box below. Take time to look through all the responses to see if they are applicable before moving on to the next question. It is acceptable for the health worker to wait while you are doing this. 1 = MENTIONED 2 = NOT MENTIONED LAST BOXES (X, Y, and Z) 0 = NO ANSWER 7 = REFUSE 8 = DON"T KNOW *(REF: WHO 2006 IMPC)*	A	ASKS (ANY QUESTION)	1	2
		B	EXAMINES PATIENT (ANY EXAMINATION)	1	2
		C	GET HELP FROM COLLEAGUE	1	2
		D	GET HELP FROM WRITTEN GUIDELINES	1	2
		E	REFERS URGENTLY TO HOSPITAL	1	2
		F	SEND THE PATIENT HOME	1	2
		G	ADMINISTER AN INJECTABLE ANTIBIOTIC	1	2
		H	ADMINISTER AN ORAL ANTIBIOTIC	1	2
		I	ADVISE ON HOME TREATMENT OR WHEN TO RETURN TO FACILITY	1	2
		J	INSERT IV LINE	1	2
		K	ADMINISTER IV FLUIDS (E.G. NORMAL SALINE, RINGER'S LACTATE)	1	2
		L	MENTIONS TO GIVE THESE FLUIDS AT A RAPID RATE	1	2
		M	MASSAGE UTERUS	1	2
		N	EXPEL CLOTS	1	2
		O	ADMINISTER OXYTOCIN	1	2
		P	ADMINSTER ERGOMETRINE	1	2
		Q	APPLY BIMANUAL UTERINE COMPRESSION	1	2
		R	APPLY AORTIC COMPRESSION	1	2
		S	REMOVE PLACENTA FRAGMENTS MANUALLY	1	2
		T	ADMINISTER MAGNESIUM SULPHATE	1	2
		U	ADMINISTER DIAZEPAM	1	2
		V	GO TO THE SHOP TO BUY A NEW BLOOD PRESSURE CUFF	1	2
		X	NO ANSWER	0	
		Y	REFUSE TO ANSWER	7	
		Z	DON'T KNOW	8	
			FREE FORM BOX FOR OTHER RESPONSES:		

(5.07)	**Thank you for your responses. Let's continue with the second question.** **Mrs Sy continues to bleed heavily. What will you do next?** *Instructions:* When the health worker stops mentioning further answers, ask again: **Is there anything else you would do next?** *Instructions:* Please do not read out the answers. If the health worker mentions answers which you are not sure how to code, please write it in the free form box below. Take time to look through all the responses to see if they are applicable before moving on to the next question. It is acceptable for the health worker to wait while you are doing this. 1 = MENTIONED 2 = NOT MENTIONED LAST BOXES (X, Y, and Z) 0 = NO ANSWER 7 = REFUSE 8 = DON"T KNOW	A	ASKS (ANY QUESTION)	1	2
		B	EXAMINES PATIENT (ANY EXAMINATION)	1	2
		C	GET HELP FROM COLLEAGUE	1	2
		D	GET HELP FROM WRITTEN GUIDELINES	1	2
		E	REFERS URGENTLY TO HOSPITAL	1	2
		F	SEND THE PATIENT HOME	1	2
		G	ADMINISTER AN INJECTABLE ANTIBIOTIC	1	2
		H	ADMINISTER AN ORAL ANTIBIOTIC	1	2
		I	ADVISE ON HOME TREATMENT OR WHEN TO RETURN TO FACILITY	1	2
		J	INSERT IV LINE	1	2
		K	ADMINISTER IV FLUIDS (E.G. NORMAL SALINE, RINGER'S LACTATE)	1	2
		L	MENTIONS TO GIVE THESE FLUIDS AT A RAPID RATE	1	2
		M	MASSAGE UTERUS	1	2
		N	EXPEL CLOTS	1	2
		O	ADMINISTER OXYTOCIN	1	2
		P	ADMINSTER ERGOMETRINE	1	2
		Q	APPLY BIMANUAL UTERINE COMPRESSION	1	2
		R	APPLY AORTIC COMPRESSION	1	2
		S	REMOVE PLACENTA FRAGMENTS MANUALLY	1	2
		T	ADMINISTER MAGNESIUM SULPHATE	1	2
		U	ADMINISTER DIAZEPAM	1	2
		V	GO TO THE SHOP TO BUY A NEW BLOOD PRESSURE CUFF	1	2
		X	NO ANSWER	0	
		Y	REFUSE TO ANSWER	7	
		Z	DON'T KNOW	8	
			FREE FORM BOX FOR OTHER RESPONSES:		

(5.08)	**Thank you for your responses. Based on the information given earlier, what do you think are the most likely diagnoses? You may mention more than one answer.** *Instructions*: Please do not read out the answers. If the health worker mentions answers which you are not sure how to code, please write it in the free form box below. Take time to look through all the responses to see if they are applicable before moving on to the next question. It is acceptable for the health worker to wait while you are doing this. 1 = MENTIONED 2 = NOT MENTIONED LAST BOXES (X, Y, and Z) 0 = NO ANSWER 7 = REFUSE 8 = DON"T KNOW	A	POST PARTUM HAEMMORHAGE	1	2
		B	TWIN OR TRIPLET PREGNANCY	1	2
		C	PLACENTA PRAEVIA	1	2
		D	UTERINE INVERSION	1	2
		E	UTERINE RUPTURE	1	2
		F	CERVICAL TEAR	1	2
		G	UTERINE ATONY	1	2
		H	RETAINED PLACENTA OR RETAINED PLACENTA FRAGMENTS	1	2
		I	ECLAMPSIA OR PRE-ECLAMPSIA	1	2
		J	HEART DISEASE OR ARRTHYMIA	1	2
		K	THIRD OR FOURTH DEGREE PERINEAL TEAR	1	2
		L	INFECTION	1	2
		M	DEEP VEIN THROMBOSIS OR PULMONARY EMBOLISM	1	2
		N	POST NATAL DEPRESSION	1	2
		O	THIS IS A NORMAL DELIVERY	1	2
		X	NO ANSWER	0	
		Y	REFUSE TO ANSWER	7	
		Z	DON'T KNOW	8	
			FREE FORM BOX FOR OTHER RESPONSES:		

(5.09)	**Thank you for your responses. Have you seen a similar case to this in real life?**		YES	1	
			NO	2	
			REFUSE	7	
			DON'T KNOW	8	

COMMENTS BY INTERVIEWER

(6) Case Scenario 3

Instructions: Please DO NOT give the B6 Laminated Card to the health worker yet. Please give the B5-3 Laminated Card to the health worker now.

Please read: **Thank you for responses. Let's go through the last case scenario which is on growth monitoring. Are you ready? (pause) While returning from the nearby market, Mrs. Boualamphan brings in her 14-month old son, Phet, for a growth monitoring visit. She went for a village meeting where nutrition and health issues were discussed last night, and some of her friends mentioned that they thought Phet was quite small sized.**

(6.01)

I am now going to ask two separate questions. The first is about questions you would ask Mrs Boulamphan about Phet. The second question is about what else you would like to check with regards to Phet apart from questions to the mother. There will also be a later question on treatment actions.

Let's start with the first. What questions would you ask Mrs Boualamphan about Phet during this growth monitoring visit?

Instructions: When the health worker stops mentioning further answers, ask again: **Are there any other questions would you ask Mrs Boualamphan about Phet during this growth monitoring visit?**

Instructions: Please do not read out the answers. If the health worker mentions answers which you are not sure how to code, please write it in the free form box below. Take time to look through all the responses to see if they are applicable before moving on to the next question. It is acceptable for the health worker to wait while you are doing this.

1 = MENTIONED
2 = NOT MENTIONED

LAST BOXES (X, Y, and Z)
0 = NO ANSWER
7 = REFUSE
8 = DON"T KNOW

A	Any question on child's (fine or gross) motor development (e.g. walking or crawling, self-feeding, play)	1	2
B	Any question on child's language or social development (e.g. speech, pointing to body parts, interactions with other children)	1	2
C	Any question on breastfeeding	1	2
D	Any question on complementary feeding	1	2
E	Any question on other family members (such as Phet's siblings)	1	2
F	Any question on the birth history of Phet	1	2
G	Any question on immunizations	1	2
H	Any question on recurrent illnesses (e.g. cough, fever, infections of the ear, nose, throat, eyes, skin) excluding diarrhoea	1	2
I	Any question on diarrhoea	1	2
L	Any question on hand-washing/sanitation practices	1	2
J	Any question on deworming medication	1	2
K	Any question on Vitamin A supplementation	1	2
X	NO ANSWER	0	
Y	REFUSE TO ANSWER	7	
Z	DON'T KNOW	8	

FREE FORM BOX FOR OTHER RESPONSES:

(6.02)	**Thank you for your responses. Apart from asking Mrs Boulamphan questions, what would you like to check with regards to Phet? Remember there will also be a later question on treatment actions, so I will not need those answers right now. What would you like to check with regards to Phet?** *Instructions:* When the health worker stops mentioning further answers, ask again: **Is there anything else you like to check with regards to Phet?** *Instructions:* Please do not read out the answers. If the health worker mentions answers which you are not sure how to code, please write it in the free form box below. Take time to look through all the responses to see if they are applicable before moving on to the next question. It is acceptable for the health worker to wait while you are doing this. 1 = MENTIONED 2 = NOT MENTIONED LAST BOXES (X, Y, and Z) 0 = NO ANSWER 7 = REFUSE 8 = DON"T KNOW	A	MCH Handbook ("pink book"), vaccination card, growth chart	1	2
		B	Any form of examination of the child (e.g. general examination, palpate abdomen, auscultate heart or lungs)	1	2
		C	Weight	1	2
		D	Height or Length	1	2
		E	Plot the weight/height/length into the growth chart	1	2
		F	Mid-upper arm circumference or head circumference	1	2
		X	NO ANSWER	0	
		Y	REFUSE TO ANSWER	7	
		Z	DON'T KNOW	8	
		FREE FORM BOX FOR OTHER RESPONSES:			

(6.03)	*Instructions:* Please give the B6 laminated card to the health worker now. *Please read:* **Thank you very much for your responses. You decide to weigh 14-month old Phet. He weighs 7.5kg. You plot his weight on his growth chart. This is what it looks like. Please have a look at it now and when you are ready, I will ask you a question about it. (pause). The question is: Are you concerned about Phet's growth?**		YES	1	
			NO	2	
			THE CHART IS INCORRECTLY PLOTTED	3	
			CANNOT BE DETERMINED FROM THE CHART	4	
			OTHER: _____	6	
			REFUSE	7	
			Don't know	8	
(6.04)	**Thank you for your responses. What treatment actions would you take?** *Instructions:* When the health worker stops mentioning further answers, ask again: **Are there any other treatment actions would you take?** *Instructions:* Please do not read out the answers. If the health worker mentions answers which you are not sure how to code, please write it in the free form box below. Take time to look through all the responses to see if they are applicable before moving on to the next question. It is acceptable for the health worker to wait while you are doing this. 1 = MENTIONED 2 = NOT MENTIONED LAST BOXES (X, Y, and Z) 0 = NO ANSWER 7 = REFUSE 8 = DON"T KNOW	C	GET HELP FROM COLLEAGUE	1	2
		D	GET HELP FROM WRITTEN GUIDELINES	1	2
		E	REFERS TO HOSPITAL	1	2
		F	SEND THE PATIENT HOME	1	2
		G	ADMINISTER AN INJECTABLE ANTIBIOTIC	1	2
		H	ADMINISTER AN ORAL ANTIBIOTIC	1	2
		I	ARRANGE FOR FOLLOW-UP VISITS	1	2
		J	DE-WORMING MEDICATION (E.G. MEBENDAZOLE)	1	2
		K	VITAMIN A	1	2
		L	IRON OR FOLIC ACID	1	2
		M	ANY OTHER VITAMINS OR SUPPLEMENTS	1	2
		O	ADVISE ON COMPLEMENTARY FEEDING	1	2
		P	ADVISE ON BREASTFEEDING	1	2
		Q	ANY OTHER ADVISE ON DIET OR NUTRITION	1	2
		R	ANY ADVISE ON WATER, HYGEINE, OR SANITATION	1	2
		V	PROVIDE MISSED IMMUNIZATIONS	1	2
		X	NO ANSWER	0	
		Y	REFUSE TO ANSWER	7	
		Z	DON'T KNOW	8	
		FREE FORM BOX FOR OTHER RESPONSES:			

(6.05)	**In your view, children in this health center area generally have ... ?** *Instructions:* Please read the responses 1-5? Single answer		Much higher height-for-age than they should 1	
			Somewhat higher height-for-age than they should 2	
			Height-for-age as it should be 3	
			Somewhat lower height-for-age than they should 4	
			Much lower height-for-age than they should 5	
			Refuse 7	
			Don't know 8	
(6.06)	**Thank you for your responses. The final question is: If 14-month old Phet is not able to walk at this age, would you be ... ?** *Instructions:* Please read the responses 1-5? Single answer. It is acceptable for the health worker to look at the B6 laminated card if they decide to on their own initiative.		Not at all concerned 1	
			A bit concerned 2	
			Concerned 3	
			Very concerned 4	
			Extremely concerned 5	
			Refuse 7	
			Don't know 8	
0.03	Instructions: Please record the time in HH:MM			

Please read: **Thank you very much for helping to answer all these question. Can I remind you not to discuss these questions with your colleagues as we may be asking them the same questions.**

COMMENTS BY INTERVIEWER


147
SonoTrax

SARA Provider Ability Part B Survey

Laminated Card B5-1

Case Scenario 1

You are working at a health center when Nok, a little girl aged 10-months and weighing 6.5kg is brought to the facility by her mother because she has had many episodes of diarrhoea for about three days. Nok hasn't eaten, drunk fluids, or breastfed since yesterday. When asked, her mother said that she did not vomit and does not have a fever. There is no blood in her stool. Nok appears weak and her eyes are sunken. You pinch the skin of the abdomen and the skin came back after three seconds.

Question

Your health center is well equipped and stocked with all essential medications. The nearest district hospital is one hour away. What would you do for Nok?

NHSR Health Facility Part B Survey

Laminated Card B5-2

Case Scenario 2

Mrs Sy is 43 years old and has had 8 previous uncomplicated pregnancies and deliveries. No problems have been noted during antenatal check-ups for this pregnancy. She has just given birth to her 9th child in your health center half an hour ago. The baby is a 2.9kg girl and is well. However, after delivery of the placenta, you notice that the placenta is not complete. She is bleeding and has soaked her dress ("sinh"). She is pale and says that she feels weak. Her pulse is 130 beats per minute. You are unable to measure her blood pressure because the blood pressure cuff is leaking.

Question

Your health center is well equipped and stocked with all essential medications. The nearest district hospital is one hour away.

I will be asking you two questions about what you would do for Mrs Sy. The first is "What would you do for Mrs Sy in the first 30 mins?". I will then give you an update on Mrs Sy's progress and ask a second question on "What you would do next?".

Let's start with the first question: What would you do for Mrs Sy in the first 30 mins?

(Subsequent questions will be read out by the interviewer)

NHSR Health Facility Part B Survey

Laminated Card B5-3

Case Scenario 2

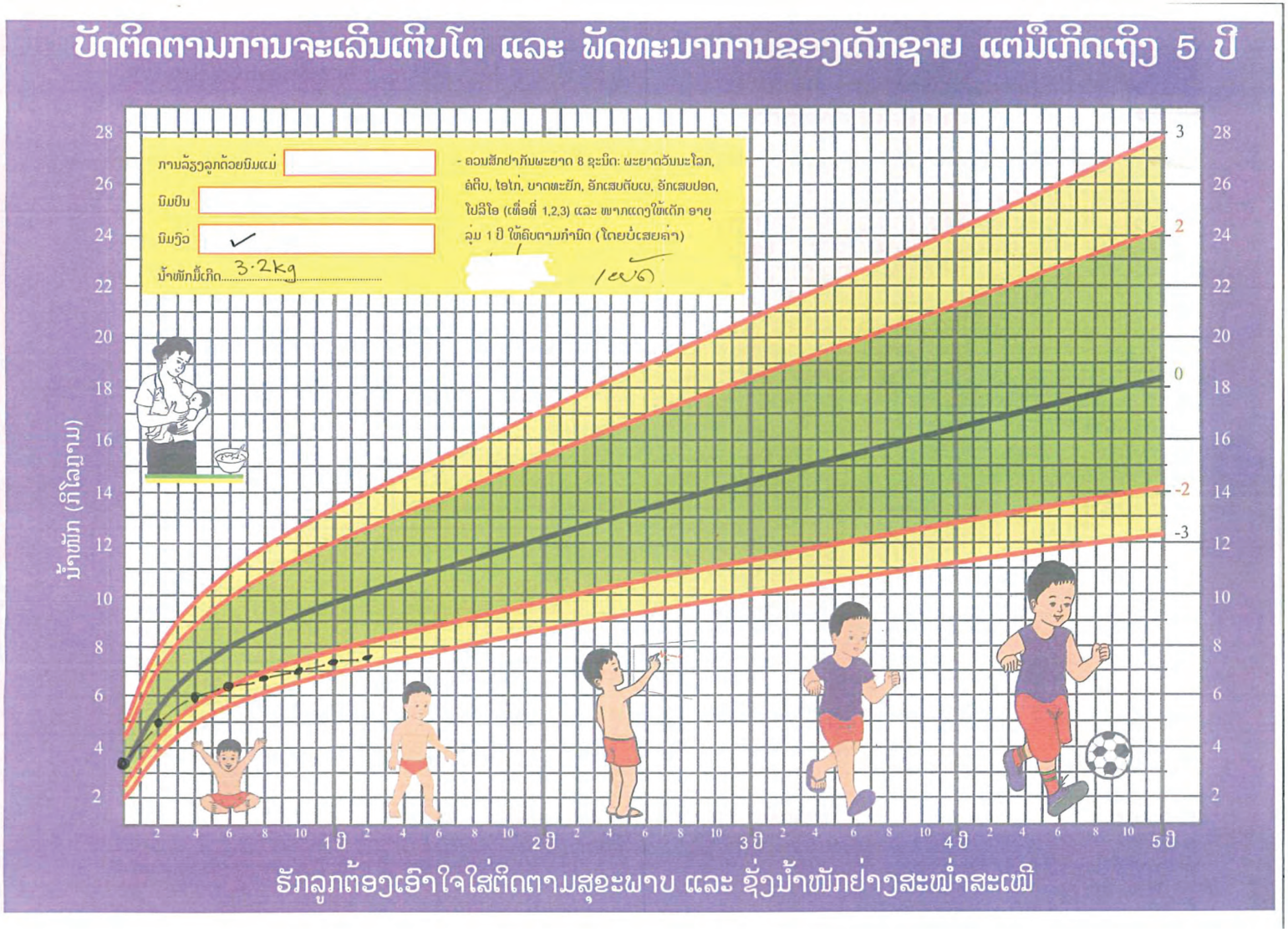
While returning from the nearby market, Mrs. Boualamphan brings in her 14-month old son, Phet, for a growth monitoring visit. She went for a village meeting where nutrition and health issues were discussed last night, and some of her friends mentioned that they thought Phet was quite small sized.

Question

I am now going to ask two separate questions. The first is about questions you would ask Mrs Boulamphan about Phet. The second question is about what else you would like to check with regards to Phet apart from questions to the mother. There will also be a later question on treatment actions.

Let's start with the first. What questions would you ask Mrs Boualamphan about Phet during this growth monitoring visit?

(Subsequent questions will be read out by the interviewer)


ບັດຕິດຕາມການຈະເລີນເຕີບໂຕ ແລະ ພັດທະນາການຂອງເດັກຊາຍ ແຕ່ມື້ເກີດເຖິງ 5 ປີ
ການລ້ຽງລູກດ້ວຍນົມແມ່
ນົມຜົນ
ນົມງົວ
ນ້ຳໜັກມື້ເກີດ 3.2kg
- ຄວນສັກຢາກັນພະຍາດ 8 ຊະນິດ: ພະຍາດວັນນະໂລກ, ຄໍຕີບ, ໄອໄກ່, ບາດທະຍັກ, ອັກເສບຕັບຫຼ, ອັກເສບປອດ, ໂປລິໂອ (ເທື່ອທີ່ 1,2,3) ແລະ ໜາກແດງໃຫ້ເດັກ ອາຍຸ ລຸ່ມ 1 ປີ ໃຫ້ຄົບຕາມກຳນົດ (ໂດຍບໍ່ເສຍຄ່າ)
ນ້ຳໜັກ (ກິໂລກຼາມ)
28
26
24
22
20
18
16
14
12
10
8
6
4
2
3
2
0
-2
-3
1 ປີ
2 ປີ
3 ປີ
4 ປີ
5 ປີ
ຮັກລູກຕ້ອງເອົາໃຈໃສ່ຕິດຕາມສຸຂະພາບ ແລະ ຊັ່ງນ້ຳໜັກຢ່າງສະໝ່ຳສະເໝີ

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