Results of the First Health Centre Survey

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Abstract

This report summarizes results from a baseline survey of health centres affiliated with the SKY micro-health insurance program in rural Cambodia. The survey is the first data collection carried out as part of a larger project to understand how affiliation with SKY affects health centres and the health care received by the families they serve. This paper describes the status of these health centres in August and November 2008. We find evidence that health centres were open most of their scheduled hours, had most of the standard list of medicines, and appeared to be improving in quality. At the same time, basic hygiene remains a challenge in many health centres, and there remains room for substantial improvement along other dimensions as well. Future surveys and qualitative research will examine how SKY has affected the quality of health centres and how health centre quality affects membership in SKY.

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1 Introduction

1.1 Overview of SKY insurance

SKY ("Sokhapheap Krousat Yeung," "Health for Our Families" in Khmer) is an innovative micro- health insurance program operating in Cambodia. SKY was created by the French NGO Groupe de Recherche et d'Echanges Technologiques (GRET).

SKY aims to improve the health of Cambodians by providing affordable health insurance and quality care without the risk of impoverishment. For a fixed monthly premium, SKY offers households free and unlimited primary and emergency care at contracted public health facilities, as well as a number of other services.[2] By 2008, SKY operated in four provinces (Takeo, Kandal, Kampong Thom, and Kompot) and in the capital, Phnom Penh.

1.2 Public Healthcare Providers in Cambodia

SKY contracts directly with Cambodia's public health system, which primarily has three levels of healthcare facilities: Provincial-level hospitals, Operational District (OD) Referral Hospitals, and community Health Centres, the focus of this study.[3] Each of Cambodia's provinces has one provincial hospital and is divided into several operational districts, each with its own district-level Referral Hospital and an average of eleven Health Centres.[4] Each Health Centre serves several villages and around 13,500 people on average.[5]

Public facilities suffer from low utilization rates. According to 2005 Demographic and Health Survey (DHS) estimates, less than a quarter of those who sought treatment for illness or injury visited a public health facility. Even fewer of second and third treatments were sought at public facilities. Costly travel, long waiting times, shortages of supplies, personnel absence, and impolite staff are the most common complaints made about public facilities. (Collins 2000; Annear et al 2006)

1.3 SKY's Focus on Provider Quality

One of SKY's primary goals is to "facilitate and encourage access for these households to quality health care, both at primary and secondary levels, to prevent severe health risks."[6] To further that goal, SKY chooses its partner health facilities carefully to ensure that it can provide a certain standard of quality to clients.

SKY also makes efforts to improve the quality of healthcare delivered at these facilities. It hires Member Facilitators (MFs) to be present at facilities and manage client complaints. Based on conversations with Member Facilitators, problems are relatively rare but the most common are dissatisfaction with the speed of service (members sometimes feel entitled to receive service before non-members) and with being denied the quantity or type of medicine requested. SKY insurance agents (IAs) also monitor quality with occasional client surveys.

[2] Coverage also includes the following services: 1) free emergency transportation between Health Centers and hospitals, 2) a funeral grant and 3) traditional music for funerals.
[3] There are also smaller public healthcare facilities called health posts in more remote locations.
[4] The provincial hospital serves as the OD Referral Hospital for the ODs in which the provincial hospital is located.
[5] Estimates are based on data from the Administrative & Health Facility Mapping Health Coverage Plan, 2004-2005.
[6] SKY Website, http://www.sky-cambodia.org/

1.4 The SKY Impact Evaluation

The SKY Evaluation is an evaluation of the SKY health insurance program. The focal study design uses a ***randomized control trial*** to examine the causal effect of health insurance on households' economic and health outcomes and healthcare utilization decisions and to understand who does and does not choose to purchase insurance. The study will provide some of the only rigorous evidence on the effectiveness of micro-health insurance on improving households' access to health care and protecting households from the economic consequences of health shocks as well as on the ability of health micro-insurance providers to become financially sustainable. Results of the evaluation will be relevant to micro-health insurers, donors, and policymakers both in Cambodia and globally.

1.5 Goals of this Report

Our goal in evaluating health centres is to understand how health centres and SKY affect each other. For example, are customers more willing to purchase SKY insurance if the local health centre provides high-quality care? Does SKY insurance improve health more in such settings? How does the availability of SKY insurance affect health centre operations?

This report describes the status of health centre quality near the beginning of the SKY Impact Evaluation intervention. Results in this report are based on the first round of data collection using the health centre survey, one of several forms of data collection on health centres that the SKY evaluation project will undertake. It asks several measures of perceived health centre quality, asks about how the facility has changed since SKY began operations there and uses a set of checklists on operating hours, drug supply, cleanliness, and equipment.

The remainder of the report is organized as follows: Section 2 discusses our survey methodology and sample size; Section 3 examines subjective measures of facility quality and perceived changes to quality since SKY's introduction at health centres; Section 4 discusses for facilities' hours of operation; Section 5 reports on drug availability at facilities; Section 6 discusses cleanliness and hygiene observed at facilities; Section 7 reports on the availability of basic medical equipment and infrastructure; Section 8 examines the relationship between facility quality and OD and Health Center characteristics; and Section 9 concludes. The survey instrument is available in Appendix 1 and a full set of results is presented in Appendix 2.

To the extent possible, results from this survey are compared to information in a public health facility assessment of Takeo province in 2005. The assessment, conducted by a team of five doctors coordinated by GRET, was used to determine the feasibility of expanding SKY throughout the province. It assessed facilities in all five ODs in Takeo, including Ang Roka and Daun Keo (two of the ODs where SKY expanded in 2008 and which are part of this 2008 survey). Some results are available in the 2005 report at the health centre level but others are available only by OD. Results for measures that are comparable to those used in our 2008 survey are only available at the OD level. Comparing results in the 2008 survey to information from 2005 should allow us to both check that information across the two reports is consistent and get an idea of what might have improved in health centres since 2005. However, because the measures differ across surveys and because the 2005 survey covered all ODs while the 2008

sample was only the subset of ODs SKY chose to work with,[7] the comparisons are merely descriptive. Further, it is difficult to discern whether any improvements we find are due to the introduction of SKY, government-led improvement in health centre quality or some other factor. Information reported in other parts of this survey was not sufficiently similar to those used in the 2005 assessment to allow for comparison.

1.6 A Note on Assessing SKY's Effect on Health Centre Quality

While the proposed design of the impact evaluation aims at producing estimates of the effect of insurance at the household level, a key question of interest is the program's effect on public health providers. If the proliferation of health insurance leads to an increase in utilization of public health care, facilities may be able to improve quality by capitalizing on benefits of scale. For example, an increased number of births performed in the health facility may make it worthwhile and affordable for the facility to buy a sonogram, increasing the quality of care for all, even non-SKY members.

Providers may also change their behaviour in response to insurance. The SKY program operates by providing a capitation rate to health centres, meaning that a fixed amount is paid to each health facility for each SKY member that has designated that facility as their primary one. It is possible that since health centres receive no incremental revenue from treating a SKY patient, they will give SKY members inferior treatment or turn these patients away.[8] Alternatively, since SKY members enjoy an administrative recourse to ill-treatment or demands for side payments at the health centres, they may enjoy better or more comprehensive treatment than non-SKY members. The follow-up surveys of SKY and non-SKY member households may be used to assess the importance of such effects.

In an ideal setting, the order of the rollout of the insurance program to health centre catchment areas would be randomized so that health centres with and without SKY affiliation are similar in all other ways. This would enable us to gauge the effect of SKY on providers by comparing service indicators of health centres in regions in which insurance was initially offered to those in which insurance was offered later. Randomization would ensure that facilities "treated" earlier and later did not systematically differ from one another. But the randomization of rollout was not feasible, as program areas are selected strategically in order to maximize the effectiveness of SKY insurance. Because the order of rollout is strategic, regions where SKY is introduced later in the rollout process are likely to differ substantially from early regions in ways that are directly related to provider characteristics.

The best we can do to gauge impacts on providers is to compare health clinics before and after the SKY program was introduced using data from baseline and follow-up surveys of health centres and of households. While comparison over time allows us to measure the changes to facilities since the introduction of SKY, without a valid comparison group of health centres without SKY, we cannot be certain that these changes are attributable to the introduction of

[7] The 2005 assessment are for all ODs in Takeo Province combined. The 2008 survey results for Takeo Province are only for two ODs—Ang Roka and Daun Keo—one of which (Ang Roka) is typically found to have the highest quality facilities in the province in the 2005 assessment.

[8] Note that SKY has member facilitators installed at health care facilities to prevent this type of discrimination, and SKY members are encouraged to report such behavior to the program administration.

SKY. Other changes may have taken place during the time period between the two survey rounds. This is particularly relevant in Cambodia, where many NGOs and donors conduct programs to improve Cambodia's health system.

2 Methodology and Sample Size

2.1 Respondents

To minimize data collection costs, the survey focuses on observations by SKY member facilitators (MFs). SKY hires MFs to be present at health facilities to facilitate treatment for SKY members and manage client complaints and questions as needed. MFs typically work mornings at one particular Health Centre.

2.2 Survey Content

The research team designed the survey instrument to be as simple to complete as possible. The first section of the survey asks how several measures of perceived quality (waiting time, cleanliness, politeness, satisfaction with services, absenteeism and thank you payments) have changed since the member facilitators started working at the facility. These questions largely overlap questions in the baseline household survey to allow for comparisons.

The rest of the survey consists of checklists of operating hours, drug supply, cleanliness, and equipment supply that the MF completed after returning to the health centre. The section on hours of operation was completed every day for one week, starting the first Monday after training. We selected these indicators to allow some degree of comparison with previous GRET and MoH health centre surveys.

2.3 Survey Procedures

Domrei Research and Consulting administered the survey in Ang Roka, Koh Thom and Kompot in late August 2008 and in Daun Keo in early November 2008. Research staff introduced the health centre survey to member facilitators in a two-hour training session held during a SKY meeting of MFs. They explained the goals of the evaluation and of the health centre survey, distributed a short survey with instructions to all MFs and trained them on completing the checklist questionnaire.

Each member facilitator observed and recorded the data during the next week. MFs recorded sensitive data in a blank notebook and recopied the answers outside the health centre to avoid queries from the health staff. All questionnaires were completed and returned to our office for data entry two weeks after the training.

2.4 Survey Sample

The survey sample consists of all 38 health centres serving the catchment areas where SKY conducted village meetings for insurance between November 2007 and May 2008. The health centres are spread across the four Operational Districts that are part of the SKY Impact Evaluation: Ang Roka (10 Health Centers) and Daun Keo (15 HCs) in Takeo province, Koh Thom (7 HCs) in Kandal province and Kompot OD (6 HCs) in Kompot province. The health centres in our sample make up 100% of the health centres in Ang Roka and Daun Keo ODs, and a little over half of the health centres in Koh Thom and Kompot ODs (Table 1). The facilities

not evaluated were health centres where SKY insurance was not offered as of November 2008; rollout was scheduled for later in some parts of Koh Thom and only the SKY Equity Fund was offered at some facilities in Kompot.

Table 1: Survey Sample

OD Name	*HCs with SKY CBHI as of Nov, 2008*	*All HCs in OD*	*% HCs in OD w/SKY CBHI (Nov 2008)*	*% of our Sample from OD*
Ang Roka	10	10	100%	26%
Daun Keo	15	15	100%	39%
Koh Thom	7	12	58%	18%
Kompot	6	11	55%	16%
Total	**38**	**68**	**56%**	**100%**

3 Member Facilitator Assessment of Change in Quality

Section 1 of the health clinic survey records a general overview of facility quality since SKY began its operations. This section primarily asks MFs to rate how a set of health centre characteristics has changed since the MF (and therefore SKY) started working at the facility. Questions ask whether conditions have improved greatly, improved, stayed the same, deteriorated or greatly deteriorated.

3.1 Survey Results

Member facilitators' evaluations indicate a number of positive changes at health centres since SKY began operations at the facility. The majority of Health Centers were reported to have improved along all measures. Sixty-one percent of MFs report improvements in staff absenteeism and 82% report improvements in staff politeness. Between 63% and 76% reported improvements in cleanliness, doctor's services and waiting times. (Table 2) Over half of MFs (roughly 58%) report that clients pay thank-you payments to staff, but only "sometimes" or "rarely." The phrase 'thank you' payment is translated directly from Khmer and refers to the common practice of paying gratuities for services rendered. It can also refer to bribes demanded by service providers. SKY requires that no such payments be made in health centres in which it works. While these payments have not been eliminated, no MF answered that "thank you" payments are made "often" or "always" (Table 3).

MFs report that the situation has improved in facilities since SKY arrived, which is promising. However, these data have limitations. First, it is difficult to know how familiar MFs were with public health centres prior to working for SKY. This concern is mitigated by the fact that MFs were hired locally and typically had some prior experience as patients and relatives of patients. Second, MFs may want to portray facility operations in a good light because they work regularly with HC staff and are often friendly with them as a result. MFs requested to hide questionnaires from staff in order to be able to conduct an honest evaluation, but it is nonetheless difficult to critically evaluate one's friends. Finally, MFs are paid to ensure that health centres treat SKY clients well. Thus, they have some incentive to overstate improvements since SKY began in order to demonstrate they are doing their jobs well.

Table 2: Changes in Health Center Conditions Since SKY Began Operations

	Improved		Same		Worse	
Measure	***Count***	***% HCs***	***Count***	***% HCs***	***Count***	***% HCs***
Waiting Time	29	76%	9	24%	0	0%
Cleanliness	24	63%	14	37%	0	0%
Staff Politeness	31	82%	6	16%	1	3%
Doctor's Service	27	71%	10	26%	1	3%
Staff Absenteeism	23	61%	14	37%	1	3%

Note: Number of observations=38

Table 3: "Do people pay thank you fees to the staff?"

Do people pay thank you fees to the staff?		
	Count	***Percent***
Never	16	42%
Rarely	8	21%
Sometimes	14	37%
Total	***38***	***100%***

4 Hours of Operation

Member facilitators reported hours that facilities were open each day over a six-day period (Monday through Saturday). They were asked to record the time facilities opened, the time facilities closed, whether facilities were closed at any point during the day (for example, for lunch) and if so, for how many hours and why.

4.1 Survey Results

Facilities were open an average of 13.8 (Saturday) to 16.6 hours (Thursday) per day. Over half of the facilities were open more than 18 hours a day every day of the week besides Sunday. At the same time, around 30% of facilities were open only half-days (usually mornings) on weekdays and 41% were open only in the morning on Saturday. (Table 4) One facility in Ang Roka closed for a day and a half due to lack of supplies.

Table 4: Hours of Operation (all facilities, by day of the week)

Day	Total HCs w/ Data	Avg. # Hrs Open	Not Open		Open Half Day*		Open AM & PM		Open 18-24 Hours	
			# HCs	*% of HCs*	*# HCs*	*% of HCs*	*# HCs*	*% of HCs*	*# HCs*	*% of HCs*
Monday	38	15.4	0	-	11	29%	5	13%	22	58%
Tuesday	38	15.3	0	-	11	29%	4	11%	23	61%
Wednesday	38	14.7	1	2.6%	12	32%	4	11%	21	55%
Thursday	38	16.6	0	-	9	24%	5	13%	24	63%
Friday	38	15.9	0	-	11	29%	3	8%	20	53%
Saturday	37	13.8	0	-	15	41%	2	5%	20	54%

**Facilities open half-days are open in the mornings. During the period of observation, there was one exception to this rule--a facility that was closed in the morning dure to lack of drugs.*

4.2 Comparison to Official Hours

Official hours of operation are presented in Table 5 below. Table 6 compares observed hours of operation to official hours. We score facilities on their hours of operation by calculating the percentage of official posted hours that a facility was actually observed to be open. We did not have official hours for Ang Roka OD, thus we assumed facilities were meant to provide at least stand-by service 24 hours per day, since most facilities in Ang Roka follow this schedule.

It is promising to see that facilities are most of the hours they are supposed to be. Despite one facility being closed for a day and a half due to lack of drug inventory and despite the fact that we assume facilities are officially meant to be open many more hours than in other ODs, Ang Roka has the highest compliance rate (nearly 90%). Kompot and Koh Thom, which are officially supposed to be open the fewest number of hours, have slightly lower compliance rates of 77% and 78%, respectively. In one facility in Daun Keo the Health Center was never open in the afternoon because, according to the MF's comment, staff instead conducted a private injection practice outside of the facility.

Table 5: Official Hours of Operation by OD

OD	Mon - Fri		Sat - Sun	
	Start Time	***End Time***	***Start Time***	***End Time***
Kampot	8:00 AM	5:00 PM	8:00 AM	11:30 AM
Koh Thom	8:00 AM	5:00 PM	8:00 AM	11:30 AM
Doun Keo	7:30 AM	5:00 PM	7:30 AM	11:30 AM

**Note: We did not receive official hours of operation for Ang Roka. We assume that all Ang Roka facilities are expected to have 24-hour standby service, since most facilities there do.*

Table 6: Comparison between Official and Observed Hours of Operation (OD Averages)

OD	Official # Hours*	Hours of Operation Score *(% of Official Hours HCs Were Observed to be Open**)*	# HCs
*Ang Roka****	144	88%	10
Daun Keo	52	80%	15
Koh Thom	49	78%	7
Kompot	49	77%	4
Total	75	81%	36

**All values are calculated for a 6-day week (excluding Sunday), as data for the 2008 survey were not collected on Sunday. Thus maximum possible hours open is 144.*

***Note that MFs at some health centres reported hours during which staff was on standby as hours during which facilities were open. We count observed standby hours within official operating hours to mean the facility is open but do not count standby hours outside of official operating times for the Hours of Operation score.*

****No official hours of operation were provided for Ang Roka. Thus, based on the fact that nearly all facilities were open 24 hours in Ang Roka, we assume official hours of operation are 24 hours per day in this OD.*

4.3 Comparison to Results from 2005 Takeo Assessment

The 2005 assessment reports whether facilities were open mornings only or morning and afternoon, and also reports a continuity of care rating (the categories being "well observed," "more or less well observed" or "negligent service") by OD. The 2005 assessment team based these measures on a combination of observation of facilities' practices and by conducting interviews with HC staff members.

The 2005 assessment found health centres in the Ang Roka OD to be among the best facilities in the province in terms of operating hours. All facilities were open at least mornings

and afternoons and most (8 out of 9) had good "continuity of care." In Daun Keo OD, on the other hand, 40% of facilities were found to be open only in the mornings, and only 3 (20%) were found to have good continuity of care (53% and 27% had continuity that was "more or less well organized" and "negligent", respectively).

Because measures in the 2005 assessment were based on a combination of one day of facility observation and conversations with facility staff while measures in our 2008 evaluation were based on six days of observation, we cannot replicate the 2005 measure precisely. However, we try to create a similar measure by classifying facilities by whether they were open mornings and afternoons 4 days or more per week. Results from 2008 are similar to results in the 2005 assessment. In both, 9 facilities in Ang Roka were open mornings and afternoons (out of a total of 9 facilities in 2005 and out of 10 in 2008). In Daun Keo OD, nine out of fifteen and ten out of fifteen facilities were open mornings and afternoon in 2005 and 2008, respectively. (Table 7)

As a way to approximate the 2005 measure of "continuity of care", we classify Health Centers by whether 24-hour standby service was available 5 days or more per week, 2-4 days per week, or 1 day or fewer per week. While "continuity of care" measures are difficult to compare across reports, it seems that the availability of 24-hour standby service may have improved in Daun Keo OD. (Table 7)

Table 7: Comparison between 2005 Assessment & 2008 Survey Results for Hours of Operation

Ang Roka OD					
2005 Gret Assessment*			**2008 SKY Evaluation Survey***		
Hours of Operation	***# HCs***	***% of HCs***	**Hours of Operation**	***# HCs***	***% of HCs***
Open AM & PM (at least)	9	100%	*Open AM & PM (at least) 4+ days/week*	9	90%
Continuity of Care***	***# HCs***	***% of HCs***	***24 Hour Standby Service*****	***# HCs***	***% of HCs***
Well organised	8	89%	*Available at least 5 days/week*	9	90%
More or less well organised	1	11%	*Available 2-4 days/week*	0	0%
Negligent	0	0%	*Available 2 days or fewer*	1	10%
Total HCs in Sample	9		**Total HCs in Sample**	10	
Daun Keo OD					
2005 Gret Assessment*			**2008 SKY Evaluation Survey***		
Hours of Operation	***# HCs***	***% of HCs***	**Hours of Operation**	***# HCs***	***% of HCs***
Open AM & PM (at least)	9	60%	*Open AM & PM (at least) 4+ days/week*	10	67%
Continuity of Care*	***# HCs***	***% of HCs***	***24 Hour Standby Service****	***# HCs***	***% of HCs***
Well organised	3	20%	*Available at least 5 days/week*	9	60%
More or less well organised	8	53%	*Available 2-4 days/week*	0	0%
Negligent	4	27%	*Available 2 days or fewer*	6	40%
Total HCs in Sample	15		**Total HCs in Sample**	15	

**Data in 2005 assessment was based on one day of observation and conversations with staff. 2008 survey data was based on MF observation over a 6-day period.*

***In 2005, continuity of care was a subjective appraisal made by the assessment team and included 1) observed number of hours facility was open, 2) observation of clear and visible contact information for standby staff and 3) interviews with HC staff members. Continuity of care was classified as "well observed," "more or less well observed" or "negligent". The 2008 measures do not include the same set of information. We try to approximate the 2005 measure by classifying HCs by the number of days per week 24-hour standby service is available*

5 Drug Inventory Checklist

In order to check the availability of drugs at the Health Centre, the Member Facilitator received permission from HC officials to examine the centre's drug stock. The list of inventory is presented in Table 8.

We calculate an inventory score for each facility by taking the percentage of inventory items surveyed that was observed to be in stock (i.e. the total number of inventory items found in stock at a facility divided by twelve, the total number of inventory items surveyed).

5.1 Survey Results

With the exception of artesunate/mefloquine (used to treat malaria), drugs were mostly in stock. Tetracycline eye ointment and nylon sutures were less often in supply than other items but were still available in most facilities. (Table 8) However, less than a quarter of facilities (24%) had all 12 surveyed inventory items in stock and nearly a quarter of facilities (21%) were missing three or more items. (Table 9) Inventory scores range from .5 to 1 (i.e. 50% to 100% of items were in stock), with an average score of .85 (85% of items in stock).

Inventory supply varies substantially by OD. Koh Thom had the best record, with 67% of Health Centers having all items in stock and an average of less than one item missing per HC. HCs in Koh Thom were missing at most 3 items.

Ang Roka also had consistent supplies in general, with less than one item missing on average per facility and 2 items missing at most. As noted in Section 3, however, one facility in Ang Roka OD had to shut down for a day and a half during the week of observation because of lack of drugs. We do not know whether the facility shut down because too many items were missing or because one critical item was missing.

Kompot and Daun Keo performed relatively poorly. Kompot and Daun Keo both have substantially more items missing on average and substantially fewer facilities with all items in stock. Daun Keo was particularly poorly equipped; no facility in Daun Keo had all inventory in stock, one facility was missing 6 of 11 items and 45% (5 facilities) were missing three or more. Four facilities in Daun Keo had incomplete data and were dropped from the analysis. (Table 9)

It is important to keep in mind survey timing when discussing inventory supply. Many facilities receive supplies only periodically (for example, once per month). Thus facilities should be better stocked just after they receive supplies than they will near the end of their supply cycle. This survey was conducted around the end of the month of August 2008 in Ang Roka, Kompot and Koh Thom and at the beginning of the month of November, 2008 in Daun Keo. Because data were collected at a different time of month in Daun Keo than in other ODs and because we do not know the supply cycles of each facility, it is difficult to say whether Daun Keo's poorer performance on inventory supply is capturing facilities at their best (just after supplies have been re-stocked) or at their worst (while they are waiting for supplies to arrive).

The most commonly missing item from drug stocks was the malaria medicine artesunate/mefloquine. Only 32% of surveyed facilities had malaria medicine in stock, and in Daun Keo in Takeo Province, only one facility out of five had this medicine in stock. Health

centres in Koh Thom OD in Kandal province were more likely to be out of stock in malaria medicine than Ang Roka and Kompot (in Takeo and Kompot provinces). Lack of malaria medicine may be explained by low prevalence of malaria in some of our survey areas relative to other parts of the country. Kandal and Takeo provinces each had less than 2% of Cambodia's reported malaria cases but 10% and 7% of Cambodia's population, respectively.[9] That being said, infrequent availability is troubling both because malaria can be fatal and because people may have to resort to seeking malaria treatment from private drug suppliers, where the risk of receiving ineffective treatment is high (70% to 80% of malaria drugs were found to be fake in a study conducted in 1999). (Cambodia MoH, 2005)

Kompot OD has the highest percentage of HCs with malaria medicine in stock (Table 10). Among the provinces included in this survey, Kompot province, with 6.5% of reported malaria cases (WHO and UNICEF, 2005) and less than 5% of the Cambodia's population,[10] is where people are most prone to malaria infection. The fact that Kompot is better stocked in malaria medication is also consistent with the finding from the 2005 Demographic Health Survey (DHS) that children are treated for malaria more frequently in Kompot than in Kandal and Takeo province. Although malaria medicine supply rates are higher in Kompot than in other ODs in our study, 33% of facilities in Kompot still did not have the medicine in supply.

Table 8: Inventory of Health Centre Drug Supplies

Inventory Item	Facilities w/ item in stock	
	Count	*%*
Ferrous Sulphate (iron supplement/ anemia treatment)	38	100%
Paracetamol (mild pain killer and fever reducer)	38	100%
Amoxycillin/Ampicillin (antibiotics)	37	95%
ORS Sachets (used to treat dehydration, a common problem from diarrhea)	38	92%
Oral Contraceptive (COC) (birth control for females)	37	92%
Progesterone Only Pill (POP) (birth control for females)	37	84%
Artesunate/Mefloquine (used for malaria treatment/ prevention)	38	32%
Tetracycline Eye Ointment (antibiotic used to treat eye infections)	38	71%
Vitamin A (deficiency of Vitamin A is associated with many problems, especially eye problems that can lead to blindness in severe cases)	37	97%
Benzyl Benzoate (used to treat lice and scabies)	38	87%
Nylon Suture (used for stitches)	38	79%
Gauze Rolls	38	95%

Note: N=38

Table 9: Inventory Supply (Averages by OD)

OD	# Drugs Missing	# Items Missing in Worst Supplied HC in OD	% of HCs w/ All Drugs In Stock	Inventory Score (= % of Items in Stock)
Ang Roka	0.9	2	40%	0.93
Daun Keo	2.6	6	0%	0.78
Kompot	2.1	3	14%	0.82
Koh Thom	0.5	2	67%	0.96
Total	**1.6**	**6**	**24%**	**0.85**

[9] Calculations based on 2005 DHS estimates.
[10] Calculations based on 2005 DHS estimates.

Table 10: Closer Examination of Missing Malaria Medicine (Artesunate/Mefloquine)

Operational District	# HCs with Artesunate/Mefloquine In Stock	*Total # HCs*	*% w/ Drug in Stock*
Ang Roka	5	10	50%
Koh Thom	2	7	29%
Kompot	4	6	67%
Daun Keo	1	15	7%
Total	**12**	**38**	**32%**

5.2 Comparison to 2005 Takeo Assessment

The 2005 health facility report included an assessment of drug stocks on the day the assessment team visited the facility and discussion with facility personnel on their perceptions of drug availability. However, results from the 2005 assessment are not comparable to results from this survey. The information provided in the 2005 report is limited to an overall assessment that drug availability is not a major concern in Takeo Province health centres (including Ang Roka and Daun Keo). The report also states that, "the large majority of medical staff at health centres finds that the quantity of medicine supplied is sufficient."[11] (Lefait, 2005, p.37) While we cannot use this information to assess possible changes in drug availability between 2005 and 2008, it is consistent with findings form this survey that drugs are mostly in stock at health centres—in the two ODs in Takeo Province as well as in other ODs.

6 Hygiene & Cleanliness of Health Center

Member facilitators reported various aspects of health centre cleanliness by observing whether a set of 5 unhygienic practices (rubbish left around the Health Center occurred at facilities, rubbish bins left overflowing in the HC, used needles or syringes left out in or around the HC, soap not being available for staff hand-washing and floors needing sweeping or mopping). We create a hygiene score by taking the percentage of unhygienic practices *not* observed at facilities (i.e. the number of unhygienic practices MFs reported *not* to have observed divided by 5, the total number of unhygienic practices listed in the survey).

6.1 Survey Results

Only 3 Health Centers were clean and hygienic by all five measures used in this survey. Most facilities have at least 2 reported problems and over a quarter have 3 or 4 reported problems. The most common unclean/unhygienic practices are not having soap available for staff hand washing (soap was absent in 87% of cases) and having floors in need of sweeping (55% of cases). The first most common problem—not having soap for staff to wash their hands is a critical impediment to providing sterile health-care. On the other hand, it is promising that used syringes are not found around facilities and are thus presumably being discarded after use.

Koh Thom tended to have the worst record of the four ODs in our sample. Daun Keo had the highest hygiene score and did better than other ODs by all measures except having soap available for hand washing. (Table 11)

[11] According to the 2005 report, what medical staff did find lacking were injectable vitamins–treatments they felt compelled to provide in order to compete with the private sector.

Table 11: Hygiene Results by OD

Unhygienic Practices	% of HCs where practice observed				
	Ang Roka	*Daun Keo*	*Koh Thom*	*Kompot*	*All ODs*
Rubbish Around HC	30%	13%	57%	17%	**26%**
Rubbish Bins Overflow in HC	10%	7%	14%	17%	**11%**
Used Needles/Syringes In & Around HC	0%	0%	0%	0%	**0%**
Soap Not Available for Staff Handwashing	80%	87%	100%	83%	**87%**
Floor Needs Sweeping/Mopping	60%	40%	86%	50%	**55%**
Avg # Unhygienic Practices Observed	1.8	1.5	2.6	1.7	**1.8**
Hygiene Score ***(% of unhygienic practices not observed)***	0.64	0.71	0.49	0.67	**0.64**

6.2 Comparison to Results from 2005 Takeo Assessment

GRET's medical assessment team considered both overall cleanliness of facilities and sterile treatment of medical materials (including proper disposal), which they deemed the most important aspect of facility hygiene. Details on any specific methodology used to construct these measures are not available in the report. Overall, the 2005 team observed acceptable hygienic standards in 41% of health centres, mediocre standards in 31% of health centres and insufficient standards in 27% of health centres. They further found that 66% of health centres had sterilization material that worked and that staff was able to use properly. The rest (34%) did not engage in what they considered acceptable sterilization practices.

The 2008 survey findings that used needles are never found in and around health centres and (as reported in the next section) that syringe disposal bins are typically present in facilities may mark an improvement in health centre sterilization practices. However, the measures used in the 2005 report are sufficiently different from those used in 2008 to make comparison across the two difficult. With these cautions in mind, we can see a modest relationship between the scores in the 2 surveys. The 10 "B"-rated health centres in the 2005 assessment had an average hygiene score of 0.76 in the 2008 survey, which is better than the average score 0.62 at the 6 "C"-rated centres, which, in turn, is slightly better than score of 0.52 observed in 2008 at the 5 centres that were rated "D" in 2005.(Table 12)

Table 12: Comparison of 2005 Subjective Rating to 2008 Objective & Subjective Results by Health Center

Facility ID	2005 Assessment	2008 Survey Data		
	Grade of Hygiene in work areas	# Unhygienic Practices Observed	Hygiene Score**	MF Rating of Changes to Cleanliness of Facility since SKY began operating at HC
Ang Roka OD				
AR01	C	2	0.6	Cleaner
AR02	C	1	0.8	Same
AR03	C	2	0.6	Cleaner
AR04	-	0	1	Cleaner
AR05	D	3	0.4	Same
AR06	C	3	0.6	Cleaner
AR07	B	2	0.6	Same
AR08	B	2	0.6	Cleaner
AR09	C	3	0.4	Same
AR10	B	1	0.8	Cleaner
Daun Keo OD				
DK01	D	1	0.8	Cleaner
DK02	B	1	0.8	Cleaner
DK03	B	1	0.8	Cleaner
DK04	B	2	0.6	Cleaner
DK05	D	2	0.6	Same
DK06	B	1	0.8	Cleaner
DK07	D	4	0.2	Cleaner
DK08	B	1	0.8	Same
DK09	D	2	0.6	Cleaner
DK10	B	1	0.8	Cleaner
DK11	C	1	0.8	Same
DK12	C	2	0.6	Same
DK13	-	1	0.8	Cleaner
DK14	C	2	0.6	Same
DK15	B	0	1	Cleaner

**A random facility number was generated in order to preserve the anonymity of the SKY MF respondents. This facility number is in no way related to HC IDs used in the 2008 survey or to facility numbers used in the 2005 assessment.*

***Hygiene score calculated by adding up the number of answers of "No" to questions about unhygienic practices in Section 4 and dividing this total by 5 (the number of questions asked).*

7 Equipment

Member Facilitators also observed whether the equipment listed in Table 13 were available at the Health Center in which they work. We quantify availability into an equipment score by adding up the number of items recorded as present at a HC and dividing by 7 (the total number of items on the equipment checklist[12]).

7.1 Survey Results

Generally, Health Centers had most items on the equipment list.[13] The most common missing items were electricity supply devices (present in only 72% of HCs). Running water and sinks in treatment rooms were also often lacking (present in 79% and 84% of cases,

[12] Note that our survey asks MFs to note the presence of manual vacuum aspiration kits (used to perform simple abortions), which was present in only one health centre. Only some health centres (those with more than 40 beds and/or a certified physician or secondary midwife) are allowed by the Ministry of Health to perform abortions. Other health-centres must refer patients to a higher-level facility. (Fetters et al., 2008) According to Fetters et al. (2008), health centres that meet the requirements for performing abortions tend to be more urban facilities, whereas our sample includes only rural health centres. Because manual vacuum aspiration kits are not standard equipment (and because many facilities are in fact not supposed to carry this equipment) we are excluding this item (q58 in the survey) from our analysis.

[13] See footnote 12.

respectively). Over 90% of HCs had a functioning cooling system for storing vaccines, a baby weighing scale and syringe disposal containers (consistent with findings in the hygiene section that used syringes were never found lying around health centres).

Results for equipment availability scores are presented by Operational District. Ang Roka had the least amount of equipment missing; 80% of facilities in Ang Roka were not missing any equipment. Only one facility (10%) was missing 3 pieces of equipment and no facilities were missing more than three. Daun Keo had the worst record of the four ODs in this survey, with nearly 40% of facilities missing 3 or 4 of the seven pieces of equipment, over 50% missing 2 pieces and only 15% of facilities having no equipment missing. Average equipment scores over all surveyed HCs in a given OD are reported in Table 14.

Table 13: Stock of Equipment at Health Centers

Equipment	*# Obs*	HCs with Equipment	
		Count	*% of HCs*
Sink in Treatent Room	38	32	84%
Running Water	38	30	79%
Special Bin for Syringes	36	34	94%
Weighing Scale for Babies	36	33	92%
Electricity Supply Devices (functioning battery or solar panels)	36	26	72%
Basic Delivery Kit	35	28	80%
Functioning Cooling System for Vaccines	36	35	97%

Table 14: Average Pieces of Missing Equipment and Average Equipment Scores by OD

OD	# Pieces of Equipment Missing	Equipment Score
Ang Roka	0.4	0.94
Daun Keo	2.2	0.69
Koh Thom	0.7	0.90
*Kompot***	1.0	0.86
All ODs	**1.2**	**0.83**

***Some health centres in Daun Keo are missing answers for certain pieces of equipment. In some cases (for HCs missing information on only one piece of equipment), we ignore the missing information and calculate the Equipment Index out of 6 rather than 7. For HCs with many missing data points, we do not calculate an Equipment Index, as too much information is missing. OD average is calculated ignoring these health centres.*

7.2 Comparison to Results from 2005 Takeo Assessment

GRET's 2005 facility report in Takeo province included objective measures of whether facilities had a water distribution system (running water, a basin to collect rainwater or a water pump); electricity (on the grid, batteries that can be recharged locally or functioning solar panels); working incinerators for waste disposal; and medical equipment and materials (adult scales, weighing scale for babies and other examination materials, functioning cooling system for vaccines, thermometers, stethoscopes, etc.). Some of these measures are similar to measures in this survey—namely, whether facilities had a weighing scale for babies, a functioning cooling system for vaccines, running water and electricity. Note that all of these objective measures were available for Takeo Province as a whole and not by individual facility or even by OD, making it difficult to compare these results to those for a different sample—ODs chosen by SKY participation. As mentioned, SKY chooses to work with certain ODs specifically because of

their relatively high-quality facilities. Subjective grades for availability of medical equipment[14], water, electricity and general facility maintenance were presented by individual HC in the 2005 survey. While the 2008 measures were substantially different from the 2005 subjective measures available by facility, we examine results for the same facilities in different years side-by-side.

With regards to medical equipment, the 2005 report classified the majority (66%) of facilities as having poor quality and/or unavailable equipment and materials. Twenty-three percent of facilities were reported as being "insufficiently or deplorably" equipped and had equipment in poor repair (Lefait, 2005, pg. 30). While this subjective rating is impossible to compare to any measure in the 2008 survey, reports on the existence of baby weighing scales and vaccine cooling systems are somewhat comparable across reports.

Whereas the 2005 assessment reports that 74% of facilities in Takeo Province as a whole (52 HCs) had baby weighing scales of poor or adequate quality, the 2008 survey found that 87% of the subset of Takeo facilities surveyed (100% of HCs in Ang Roka OD) had baby weighing scales (without assigning a quality measure). The difference between 2005 and 2008 is even larger when examining the percentage of facilities with functioning vaccine cooling systems; in 2005 only 33% of Takeo's HCs had functioning systems, but by 2008 all HCs surveyed had them.

It is promising to see that the availability of baby weighing scales and functioning cooling systems for vaccines is better in the 2008 survey than in the 2005 assessment, at least in Takeo Province. However, because the samples being compared are also different it is again not clear if the differences we find between 2005 and 2008 are indications of improvement in facility equipment or whether they are simply a result of the worst-equipped facilities being excluded form the 2008 sample. Two of the three Takeo Province ODs not included in the 2008 survey (Bati and Prey Kabass) were deemed of insufficient quality for SKY to offer services. In the 2005 assessment, they were the ODs deemed "particularly bad" in terms of having functioning baby-weighing scales. Daun Keo, on the other hand, was deemed the best equipped with baby-weighing scales and was among the Takeo ODs included in the 2008 survey. Thus the differences across the samples examined in 2005 and 2008 may fully account for the differences across years in availability of equipment.

Even if our results do indicate genuine improvement, they still cannot necessarily be attributed to SKY's presence. Improvement is just as likely a result of other interventions by government or international aid organizations, as these particular pieces of equipment are typically associated with early childhood nutrition and HIV/AIDS prevention programs.

Looking first at objective measures, out of the total of 70 facilities surveyed in Takeo Province in 2005, 9% of facilities (6 HCs) had running water, 53% (37 HCs) had basins to collect rainwater or be filled with water that the facility purchases, 23% (21 HCs) had water pumps to collect groundwater and 9% (6 HCs) had no access to water. (Table 15) A substantially larger portion of Takeo Province facilities surveyed in 2008—roughly 80% (20 HCs)—were found to have running water. It is important to keep in mind, however that the

[14] Equipment evaluated was the set of equipment needed to provide services that fall under the Ministry of Health's Minimum Package of Activities (MPA) and were likely quite similar to the equipment list used in this survey.

sample in 2005 ad 2008 are different; our 2008 survey collects data in just 2 of the 5 ODs in Takeo Province (this represents only 14 of the 70 facilities assessed in Takeo in 2005 and 1 in Ang Roka that did not exist in 2005). The measures used in the two surveys are also quite different. For example, we cannot say whether access to running water has improved substantially across surveys or whether "running water" was interpreted differently by the GRET assessment team in 2005 than by MFs in 2008.

The percentage of facilities with electricity supply devices (whether electric current, battery or functioning solar panels) was lower in the 2008 survey (which found that 65%, or 15 Health Centers, in Takeo province ODs with SKY had electricity supply of some kind) than in the 2005 assessment (which found that 86%, or 60 HCs in Takeo province had electricity supply of some kind). This result is surprising; since the 2008 survey examines only health centres partnering with SKY (which are presumably higher quality) and the 2005 assessment includes 2 ODs where quality was deemed to need more improvement before partnering with SKY, we would expect a higher percentage of facilities in the 2008 sample to have electricity supply devices. The lower rates in 2008 are primarily driven by lack of electricity supply in Daun Keo OD; 90% of HCs in Ang Roka OD had access to some sort of electricity while only 46% of HCs had access in Daun Keo OD. It may be that Daun Keo has particularly poor access to electricity in Takeo Province. The perceived "worsening" in availability of electricity supply could also be partly due to the inclusion of Kirivong OD in the 2005 assessment and its exclusion in the 2008 survey. Kirivong is likely to be a higher-quality facility both because, like Ang Roka, Kirivong's health service provision is contracted to the Swiss Red Cross and because certain facilities in Kirivong were the first areas in which SKY began its operations and were so chosen due to their high quality. Kirivong is also the largest OD in Takeo both in terms of population and in terms of the number of HCs (its HCs make up 19 of the 70 HCs in the province, or 27%). (Lefait, 2005) If the availability of electricity was particularly good in Kirivong, then its exclusion in our 2008 sample may be biasing results for the availability downward as compared to the 2005 sample. On the other hand, the 2008 sample also excludes the two ODs with the lowest-quality facilities (Bati and Prey Kabass), the exclusion of which should bias results upward. It is thus difficult to determine whether the electricity supply has improved or worsened. If access to electricity has actually gotten worse, then this is a worrisome result.

Table 16 examines the availability of water and electricity by individual health centre using subjective measures in 2005 and objective measures in 2008. Objective measures were not available by individual facility in the 2005 report. Thus for water and electricity, we can compare similar sample across years but only using dissimilar measures. Of those HCs with a water availability grade of A or B in 2005, 100% had access to running water and 80% had access to electricity of some kind in 2008. Of those with a grade of C or below, only 75% had running water and 55% had access to electricity in 2008. These results provide some evidence of consistency in evaluation across the two reports when we examine the same sample across years.

Table 15: Equipment Ratings in the 2005 Assessment and 2008 Survey

Measure	2005 Assessment		2008 SKY Evaluation Survey			
	All HCs in Takeo Province		*Takeo ODs in Survey*		*All ODs in Survey*	
	# HCs	*% of HCs*	*# HCs*	*% of HCs*	*# HCs*	*% of HCs*
Material and Equipment (Overall)						
Acceptable to Passable	23	33%				
Poorly Equipped	30	43%				
Insufficent or deplorable	16	23%				
Water						
Running Water	6	9%	12	80%	18	78%
Basins collecting rainwater	37	53%	-	-	-	-
Water pump	21	30%	-	-	-	-
Nothing	6	9%	3	20%	5	22%
Electricity						
Electricity Supply Devices	60	86%	9	90%	20	87%
Nothing	10	14%	1	10%	3	13%
Weighing Scale for Babies						
Have Scale of Adequate Quality	36	51%	10	100%	23	100%
Have Scale of Poor Quality	16	23%				
Don't have a functioning scale	17	24%	0	0%	0	0%
Functioning Cooling System for Vaccines						
Yes	23	33%	10	100%	23	100%
No	47	67%	0	0%	0	0%

Table 16: Comparison of 2005 Subjective Grades & 2008 Objective Ratings of Water & Electricity by Health Center

*Facility Number**	Water		Electricity	
	2005 Availability Grade	*2008 Result (Does HC Have Running Water?)*	*2005 Availability Grade*	*2008 Result (Does HC Have Electricity Supply Device?)*
Ang Roka OD				
AR01	B	Yes	B	Yes
AR02	B	Yes	B	Yes
AR03	D	Yes	D	Yes
AR04	-	No	-	Yes
AR05	B	Yes	B	Yes
AR06	B	Yes	B	Yes
AR07	E	No	E	No
AR08	B	Yes	B	Yes
AR09	E	Yes	E	Yes
AR10	C	Yes	B	Yes
Don Keo OD				
DK01	C	Yes	C	-
DK02	C	Yes	E	Yes
DK03	C	Yes	C	No
DK04	D	Yes	E	No
DK05	A	Yes	A	No
DK06	D	No	A	No
DK07	C	Yes	B	Yes
DK08	C	Yes	C	No
DK09	A	Yes	A	Yes
DK10	D	Yes	C	Yes
DK11	C	No	D	Yes
DK12	C	Yes	C	-
DK13	-	Yes	-	No
DK14	D	No	C	No
DK15	D	Yes	E	Yes

**A random facility number was generated in order to preserve the anonymity of the SKY MF respondents. This facility number is in no way related to HC IDs used in the 2008 survey or to facility numbers used in the 2005 assessment.*

8 Overall Quality Scores and their Relation to Characteristics of ODs and Health Centers

We combine the different dimensions of quality discussed in Sections 4 through 7 into a single Health Center quality score by averaging the scores HCs received for operating hours, inventory, hygiene and cleanliness (i.e. percentage of official hours that facilities were observed to be open, percentage of the 12 inventory items on our survey found to be in stock, percentage of the 5 unhygienic practices in our survey *not* observed at HCs and percentage of the 7 equipment items in our survey found to be present at HCs).

Although SKY assesses facilities to ensure they are able to offer a minimum standard of care, health centre quality is not uniform. The level of quality available at each facility is influenced by the unique operational context of each OD. In this section we examine how quality measures relate to OD-level characteristics and individual health centre characteristics.

OD-level characteristics that are likely to influence quality include whether facilities are contracted, whether a health equity fund (HEF) is also offered in the OD, and whether SKY is operating the fund. Many of the OD-level characteristics of interest are unique to a single Operational District. For example, Ang Roka is the only OD with contracted facilities and Kompot is the only OD with SKY-operated HEFs (though poor households in Ang Roka also have access to a non-SKY equity fund). (Table 17) Other factors not examined here (for example, the local health environment, availability of alternatives to the public health system, other NGO interventions, etc.) also make ODs distinct from another and may also influence quality of care available in an OD. Because the characteristics we examine are typically unique to a single OD and because we cannot control for these other factors and cannot attribute differences in quality to these OD-level characteristics; rather, we can only make descriptive comparisons across ODs.

We also examine the relationship between facility quality and characteristics that vary by health centre—namely, SKY membership characteristics (e.g. percent of population registered with SKY, total number of SKY members that vary by individual health centre. SKY membership is likely to influence facilities' quality level because facilities receive a fixed payment (called a capitation payment) for each SKY member registered at a facility. Capitation payments provide a stable source of revenue at the beginning of the month, which presumably makes some aspects of facilities' monthly planning (e.g. inventory supply, staff pay) easier and more consistent. Health centre-level characteristics averaged by OD are presented in Table 17.

Table 17: OD and Health Center Characteristics

Province	Takeo		Kompot	Kandal
Operational District	***Ang Roka***	***Daun Keo***	***Kompot***	***Koh Thom***
Characteristics Varying by OD				
Date SKY Introduced	2001	Sep-08	Dec-07	Dec-07
# HCs in OD	10	15	11	12
Contracted?	Yes*	No	No	No
Has HEF?	Yes	No	Yes	No
SKY Involved in HEF?	No	N/A	Yes	N/A
All HCs Involved in SKY Health Insurance?	Yes	Yes	No**	Yes
SKY Product Particularities in this OD	SKY2 available***			
Characteristics Varying by HC (OD averages presented in this table)				
Target Population*	127,892	207,312	144,090	99,558
SKY Coverage (% of population in SKY)*****	7.9%	2.1%	3.5%	2.6%
# SKY Members per HC (Households)	133	44	63	57
# SKY Members per HC (Individuals)*****	749	259	365	348
# SKY HEF Members per HC (Households)*	N/A	N/A	215**	N/A
# SKY HEF Members per HC (Individuals)*	N/A	N/A	974**	N/A
Riels received per month by SKY from SKY capitation (based on data from 2007)	369,196	No Data	No Data	No Data
Riels spent per month by HC on SKY patients (based on data from 2007)	342,926	No Data	No Data	No Data

**Ang Roka facility operations are contracted with the Swiss Red Cross.*

***In Kompot OD only, SKY offers health equity funds (equivalent to free health insurace), or HEFs. 6 of the 11 HCs in Kompot have SKY health insurance (CBHI) schemes and all 11 HCs have SKY HEF scheme. The HC evaluation surveyed only those facilities where SKY offers CBHI.*

****SKY2 is another SKY inurance package that covers hospital care only and costs less money per month.*

*****Population of HC catchment areas is available by individuals for all ODs except Ang Roka, for which only the number of households is availble. We assume average family size to be the same for SKY HHs as for non-SKY HHs and estimate total population based on the average HH size among SKY members in Ang Roka.*

8.1 Quality Scores and OD Characteristics

There is quite a bit of variety in scores across Operational Districts. (Table 18) Ang Roka had the highest overall quality rating (.85) and Daun Keo and Koh Thom had the lowest (both with a score of 0.79). While Ang Roka and Kompot tended to be the higher-quality service ODs and Koh Thom tended to be among the lower-quality, no OD performed best or worst along all dimensions.

Ang Roka had the best scores in operating hours and equipment and received a high score on inventory, but it ranked third in hygiene and cleanliness. Daun Keo, on the other hand, had the highest hygiene score but the worst inventory and equipment scores. Kompot had the best inventory score and the second-highest scores for operating hours and hygiene, but it ranked third in equipment availability. Koh Thom had the second-higher equipment score but performed worst in terms of operating hours and hygiene.

The patterns among the two ODs that performed worst are particularly interesting. Daun Keo did quite well in terms of hygiene but had more trouble along dimensions requiring financial capital—inventory and equipment. Facilities in Koh Thom, on the other hand, had 90% of their equipment in stock and 82% of their inventory but performed poorly along dimensions requiring human capital—operating hours and hygiene. It is unclear what causes these patterns.

As mentioned in the previous section, the context in which SKY operates varies substantially by OD and influences the quality of service provision. The contracting model operating in Ang Roka, for example, has been rigorously shown to improve facility quality. (Bloom et al., 2006) The existence of Health Equity Fund programs in an OD may also serve to improve quality if, for example, it provides additional income to facilities. The amount of time SKY has been operating in an OD may itself improve quality or it may be a reflection of initial quality levels (since SKY was introduced earlier in higher-quality service areas).

Given the fact that Ang Roka is contracted, has an equity fund operating in the OD and has been working with SKY longest, it is not surprising that it has the highest average quality rating among the ODs in this evaluation. While Kompot is not a contracted OD, the quality of service seems to be relatively high there. It may be that additional revenues from equity fund operations in Kompot have helped facilities perform better than Daun Keo and Koh Thom (Kompot performed particularly well in terms of inventory, which can react quickly to increased operating revenue from capitation payments). However, Kompot facilities may also have performed well because SKY insurance is only offered at the best facilities in this OD. This differs from the situations in Daun Keo and Koh Thom, where SKY insurance is offered at all health centres. Daun Keo and Koh Thom, where there is no contracting, where no equity fund is being offered and where all facilities within the OD (not just the best) participate in the SKY insurance (CBHI) scheme[15], perform worse overall than other facilities. As previously mentioned, however, the quality challenges faced by each OD seem to be quite different.

Table 18: Quality Sub-Scores and Overall Score by Operational District

Score*		*Ang Roka*	*Daun Keo*	*Kompot*	*Koh Thom*	*Total*
Section 1: Q01-Q05	***Subjective Assessment of Improvement***	0.72	0.76	0.72	0.77	0.74
Section 2	***Operating Hours***	0.88	0.80	0.82	0.78	0.82
Section 3	***Inventory***	0.93	0.78	0.96	0.82	0.85
Section 4	***Hygiene & Cleanliness***	0.64	0.71	0.67	0.49	0.64
Section 5	***Equipment***	0.94	0.76**	0.86	0.90	0.86
Overall Score	***Average Score Across Sections 2-4***	**0.85**	**0.75****	**0.82**	**0.75**	**0.79**

**Scores are calculated as follows: 1) Section 1 answers are coded from 1 to 5 (1 when situation is much worse and 5 when situation is much improved). Each answer receives points equivalent to this code for each of the 5 questions asked. Points are added across questions and divided by 25 (the maximum possible number of points). 2) Section 2 scores facilities using compliance to official hours of operation (total hours HCs are actually open/total hours HCs are officially supposed to be open). 3) Section 3 measures the percentage of the 12 items of inventory on our checklist that are in stock (total inventory in stock/12). 4) Section 4 adds up the number of answers of "No" to questions on our survey observing unhygienic practices and divides this total by 5 (the number of questions asked). 5) Section 5 adds up the number of equipment pieces observed in the HC and divides by 7 (the total number of equipment items on our checklist). 6) The total score is the average of scores from sections 2-4. Note that the questions in Section 1 were not included in the overall facility quality score, as these questions assess facility improvement rather than quality per se.*

***Note that insufficient data were available in Section 5 for two HCs in Daun Keo. For the facilities, we calculated an overall score by taking an average of the 3 scores (from Sections 2 through 4) for which there was complete information.*

[15] Note that SKY will operate in all facilities in Koh Thom, but they had not yet as of the writing of this report (February 2009). If the quality of facilities in Koh Thom where SKY has not yet been offered differs from where it has, quality level in Koh Thom overall may change.

8.2 Quality Scores by Facility-Level Characteristics

We conduct basic statistical analyses on facility-level characteristics, since these characteristics vary by facility rather than by OD. However, it is important to keep in mind that we are presenting descriptive correlations rather than causal relationship. If, for example, we find that facilities with more SKY members (as a percentage of the target population or overall) are of higher quality, we cannot attribute higher quality to SKY's involvement. While it is quite plausible that facilities servicing more SKY members (equivalent to receiving more capitation payments) are performing better because they have a larger reliable operating budget at the beginning of each month, it is just as likely that access to unlimited health services at higher-quality facilities attracts more people than does service at lower-quality facilities, inducing more people to join SKY when they have access to high-quality facilities. In fact, both phenomena may be at work simultaneously. Given our study design, it is impossible to distinguish between these two scenarios.

In this section we conduct some basic regression analyses to examine the relationship between facility-level characteristics and facility quality. Our primary regression framework for quality of a health centre *h* in OD *o* uses a fixed effects regression of the form:

$$\mathbf{Quality_{oh} = a + b_1 * HC\_Characteristic_{oh} + OD_o + e_{oh}}$$

Health Center characteristics include: 1) SKY coverage (% of target population with SKY insurance), 2) absolute number of households with SKY insurance, and 3) absolute number of households who are SKY members (with SKY insurance or the SKY equity fund). We run regressions on each characteristic separately because these characteristics are highly correlated (and, in some cases, identical), making coefficient estimates with all measures together difficult to interpret.

We first estimate this regression with a fixed effect for each OD. (Model 1) This fixed effect absorbs all omitted factors that affect health centres in an OD. We also allow standard errors to be correlated within an OD (i.e. we *cluster* the standard errors by OD). Because fixed effects can absorb too much variance in small samples, we also estimate this regression excluding the OD-level fixed effects OH_o but still clustering standard errors by OD. (Model 2)

With the fixed effects for each OD (Table 19, Model 1) we find SKY membership and health centre quality is small and not statistically significant. When we have remove OD fixed effects but continue to allow standard errors to be correlated within ODs (Table 19, Model 2), we now find a positive correlation between SKY membership and health centre quality. This result is most likely driven by the variation across ODs: Ang Roka has both the highest quality and the highest membership.

It is quite plausible that SKY membership improves health centre quality, as previously discussed. However, it is just as likely that high quality health centres make insurance at public facilities more attractive and thus increase SKY membership. These regressions are not capturing causal effects, and we do not want to over-interpret their results. Future longitudinal analyses and qualitative analyses will address these issues more fully.

Table 19: Analysis of Quality by Facility-Level Characteristics

Regressions of Overall Quality Score on Facility-Level Membership Characteristics	Model 1		Model 2	
	Fixed Effects (FE) for OD, Std Errors Clustered by OD		*No FE for OD, Std Errors Clustered by OD*	
	Coefficient	*P-Value*	*Coefficient*	*P-Value*
(1) SKY Coverage (% of target population w/ SKY insurance) (a)	0.69	0.481	1.36	0.011**
(2) # HHs with SKY insurance (b)	-0.0002	0.818	0.0006	0.019**
(3) # SKY Households (HHs w/ insurance or HEF) (b)	0.0001	0.423	0.0003	0.037**

*Note 1: * indicates results are significant at the 90% level, ** indicates ignificance at the 95%.*

Note 2: Each of lines (1) through (3) represents a separate regression on the membership characteristic of interest.

(a) Population of HC catchment areas is available by individuals for all ODs except Ang Roka, for which only the number of households is availble. We assume average family size to be the same for SKY HHs as for non-SKY HHs and estimate total population based on the average HH size among SKY members in Ang Roka.

(b) Based on data from December 2008

9 Conclusion

The data presented above are limited because they describe just thirty-eight health centres at a specific moment in time based on a single information source. According to subjective measures such as member facilitator reports of staff politeness and different aspects of service provision, facilities are generally found to be improving. Hours of operation are relatively well observed (in some districts more than others), basic drugs tend to be available in most facilities, certain critical hygiene practices (namely proper disposal of used needles and syringes) are well observed and basic equipment and infrastructure is usually present. At the same time, quality remains far from perfect. Many health centres are open fewer hours than official standards require, most facilities tend to be missing at least one drug or supply and staff in nearly all HCs still lack access to the tools they need to provide sterile care (most fundamentally, soap and water).

While Ang Roka and Kompot seem to have better-quality facilities overall than Daun Keo and Koh Thom, no OD out-performs or under-performs others across all the dimensions of quality measured in this survey, and there is some variation in OD strengths and weaknesses. This is especially true for Daun Keo and Koh Thom.

While certain OD and facility characteristics—contracting, the existence of equity funds, and high membership rates—seem to be related to quality, the relationship is weak at best and tells us nothing about which way the effect runs. For example, it is as likely that higher-quality facilities are chosen for HEFs as it is that HEFs improve quality. Similarly, it is just as likely that membership rates are higher where facility quality is better as it is that higher membership rates improve facility quality.

This is the first set of data related to health centres that the SKY evaluation team has collected. Future analyses will compare these results with qualitative observations in selected villages, longitudinal survey data from several thousand households, future surveys of member facilitators, and with other data covering these and similar health centres in Cambodia. The combined evidence will help us understand both how health centre quality affects SKY (for example, by raising customers' value of SKY health insurance), how SKY affects health centre quality (for example, by providing a predictable stream of income) and, most importantly, whether the overall quality of care has improved for families who utilize SKY-affiliated health centres.

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Appendices

Appendix 1: Health Centre Survey Questionnaire

HEALTH CENTRE SURVEY

CONFIDENTIAL

Operational District (OD): _____

Health Center: _____

Introduction

The data we are collecting will inform the SKY impact evaluation. The data will be entered into the SKY evaluation database by Domrei staff. Your name will not be entered, but your answers and the data you collect will be linked to the health centre where you are currently working. Your answers will not have any influence on your work for SKY, and you have the right to refuse to answer the questions.

I certify that I have read the introduction and given my informed consent to complete this survey.

signature : _____

Name : _____

Date: ____ / ____ / 2008

Section 1: MF Assessment of changes in HC quality
MF plays as respondent. MF need to circle one answer according to owns opinion.

1	Since you started operating here, is waiting time now	much shorter	5
		shorter	4
		same	3
		longer	2
		much longer	1
2	Since you started operating here, is the health centre,	much cleaner	5
		cleaner	4
		same	3
		dirtier	2
		much dirtier	1
3	In general would you say the staff is now...	much more polite	5
		more polite	4
		same as before	3
		less polite	2
		much more impolite	1

4	Regarding the doctor's service, are people now...	much more satisfied more satisfied same as before less satisfied much less satisfied	5 4 3 2 1
5	Since you started working here, is staff...	much less often absent less often absent same as before more often absent much more often absent	5 4 3 2 1
6	Do people pay thank you fees to the staff?	Always Often Sometimes Rarely Never	5 4 3 2 1

Section 2: Health centre operating hours
MF observes and record the time that the HC open or close. MF record that why HC was closed.

7	On Monday, what time did the health centre opened?	Hour:	
8	On Monday, what time did the health centre closed?	Hour	
9	During the working day, did the health centre close? (Ex. HC closed because of health staff go to have lunch or go to do other work outside…)	No Yes	0 1
10	If yes, how many hours that the HC closed?	Hours:	
11	Why the HC was closed? (Ex. Health staff have meeting at OD go to have lunch or go to do other work outside) ***Please record all the answers that why the HC closed.***		
12	On Tuesday, what time did the health centre opened?	Hour:	
13	On Tuesday, what time did the health centre closed?	Hour:	
14	During the working day, did the health centre close? (Ex. HC closed because of health staff go to have lunch or go to do other work outside…)	No Yes	0 1

15	If yes, how many hours that the HC closed?	Hours:	
16	Why the HC was closed? (Ex. Health staff have meeting at OD go to have lunch or go to do other work outside) ***Please record all the answers that why the HC closed.***		
17	On Wednesday, what time did the health centre opened?	Hour:	
18	On Wednesday, what time did the health centre closed?	Hour	
19	During the working day, did the health centre close? (Ex. HC closed because of health staff go to have lunch or go to do other work outside…)	No Yes	0 1
20	If yes, how many hours that the HC closed?	Hours:	
21	Why the HC was closed? (Ex. Health staff have meeting at OD go to have lunch or go to do other work outside) ***Please record all the answers that why the HC closed.***		
22	On Thursday, what time did the health centre opened?	Hour:	
23	On Thursday, what time did the health centre closed?	Hour:	
24	During the working day, did the health centre close? (Ex. HC closed because of health staff go to have lunch or go to do other work outside…)	No Yes	0 1
25	If yes, how many hours that the HC closed?	Number of Hours:	
26	Why the HC was closed? (Ex. Health staff have meeting at OD go to have lunch or go to do other work outside) ***Please record all the answers that why the HC closed.***		
27	On Friday, what time did the health centre opened?	Hour:	

28	On Friday, what time did the health centre closed?	Hour: .....
29	During the working day, did the health centre close? (Ex. HC closed because of health staff go to have lunch or go to do other work outside…)	No 0 Yes 1
30	If yes, how many hours that the HC closed?	Number of Hours: .....
31	Why the HC was closed? (Ex. Health staff have meeting at OD go to have lunch or go to do other work outside) ***Please record all the answers that why the HC closed.***	
32	On Saturday, what time did the health centre opened?	Hour: .....
33	On Saturday, what time did the health centre closed?	Hour: .....
34	During the working day, did the health centre close? (Ex. HC closed because of health staff go to have lunch or go to do other work outside…)	No 0 Yes 1
35	If yes, how many hours that the HC closed?	Number of Hours: .....
36	Why the HC was closed? (Ex. Health staff have meeting at OD go to have lunch or go to do other work outside) ***Please record all the answers that why the HC closed.***	

Section 3: Drug inventory checklist

MF need to collect data by observation on drug that has in stock. MF need to ask permission from HC chief and Drug manager to see the type of the drug.

Circle 0 if the item is not available at the HC

Circle 1 if the product is available at HC

37	Ferrous sulphate or Fe/folate	Out of stock	0
		In stock	1
38	Paracetamol 100 mg tablets	Out of stock	0
		In stock	1
39	Amoxycillin or Ampicillin 250 mg	Out of stock	0
		In stock	1
40	ORS sachets	Out of stock	0
		In stock	1
41	Combined oral contraceptive (oestrogen and progesterone (COC))	Out of stock	0
		In stock	1
42	Progesterone only Pill (POP)	Out of stock	0
		In stock	1
43	Artesunate / Mefloquine	Out of stock	0
		In stock	1
44	Tetracycline eye ointment (antibiotic not steroid)	Out of stock	0
		In stock	1
45	Vitamin A 100,000U	Out of stock	0
		In stock	1
46	Benzyl benzoate 25%	Out of stock	0
		In stock	1
47	Nylon suture 2/0	Out of stock	0
		In stock	1
48	Gauze rolls	Out of stock	0
		In stock	1

Section 4: Hygiene and Cleanliness of HC and its surroundings **MF need to complete the instrument by observe on the real situation.**			
49	Piles of rubbish around the health centre.	No Yes	0 1
50	Bins full or over flowing in the health centre.	No Yes	0 1
51	Used needles or syringes in or around the health centre.	No Yes	0 1
52	Soap not available for staff to wash hands.	No Yes	0 1
53	Floor that needed sweeping or mopping.	No Yes	0 1
Section 5: Equipment **MF need to collect data by observe the equipment that have in the HC.**			
54	A sink in the treatment room.	No Yes	0 1
55	Running water	No Yes	0 1
56	A special bin for syringes	No Yes	0 1
57	A weighing scale for babies	No Yes	0 1
58	Manual Vacuum Aspiration Kit	No Yes	0 1
59	electricity supply devices (functioning battery of solar panels)	No Yes	0 1
60	Basic delivery kit	No Yes	0 1

61	Functioning cooling device for vaccine	No	0
		Yes	1

s

Appendix 2: Full Set of Tables of Survey Results by OD

1 Section 1: MF Assessment of Changes in HC Quality

MF is the respondent. MF circles one answer according to his/her opinion.

Q01: Since you started operating here, is waiting time now:										
Answer	**Ang Roka**		**Daun Keo**		**Koh Thom**		**Kompot**		**All ODs**	
	# HCs	***% of HCs***	***# HCs***	***% of HCs***	***# HCs***	***% of HCs***	***# HCs***	***% of HCs***	***# HCs***	***% of HCs***
Much Longer	0	0%	0	0%	0	0%	0	0%	0	0%
Longer	0	0%	0	0%	0	0%	0	0%	0	0%
Same	5	50%	1	7%	1	14%	2	33%	9	24%
Shorter	5	50%	13	87%	6	86%	4	67%	28	74%
Much Shorter	0	0%	1	7%	0	0%	0	0%	1	3%
Total in OD	**10**	**100%**	**15**	**100%**	**7**	**100%**	**6**	**100%**	**38**	**100%**

Q02: Since you started operating here, is the health centre:										
Answer	**Ang Roka**		**Daun Keo**		**Koh Thom**		**Kompot**		**All ODs**	
	# HCs	***% of HCs***	***# HCs***	***% of HCs***	***# HCs***	***% of HCs***	***# HCs***	***% of HCs***	***# HCs***	***% of HCs***
Much Cleaner	0	0%	0	0%	0	0%	0	0%	0	0%
Cleaner	0	0%	0	0%	0	0%	0	0%	0	0%
Same	4	40%	5	33%	3	43%	2	33%	14	37%
Dirtier	6	60%	10	67%	4	57%	4	67%	24	63%
Much Dirtier	0	0%	0	0%	0	0%	0	0%	0	0%
Total in OD	**10**	**100%**	**15**	**100%**	**7**	**100%**	**6**	**100%**	**38**	**100%**

Q03:In general, would you say the staff is now:										
Answer	**Ang Roka**		**Daun Keo**		**Koh Thom**		**Kompot**		**All ODs**	
	# HCs	***% of HCs***	***# HCs***	***% of HCs***	***# HCs***	***% of HCs***	***# HCs***	***% of HCs***	***# HCs***	***% of HCs***
Much More Polite	0	0%	0	0%	0	0%	0	0%	0	0%
More Polite	0	0%	0	0%	0	0%	0	0%	0	0%
Same	5	50%	1	7%	1	14%	2	33%	9	24%
More Impolite	5	50%	13	87%	6	86%	4	67%	28	74%
Much More Impolite	0	0%	1	7%	0	0%	0	0%	1	3%
Total in OD	**10**	**100%**	**15**	**100%**	**7**	**100%**	**6**	**100%**	**38**	**100%**

Q04: Regarding the doctor's service, are people now:										
Answer	**Ang Roka**		**Daun Keo**		**Koh Thom**		**Kompot**		**All ODs**	
	# HCs	***% of HCs***	***# HCs***	***% of HCs***	***# HCs***	***% of HCs***	***# HCs***	***% of HCs***	***# HCs***	***% of HCs***
Much More Satisfied	0	0%	0	0%	0	0%	0	0%	0	0%
More Satisfied	4	40%	12	80%	7	100%	4	67%	27	71%
Same as Before	5	50%	3	20%	0	0%	2	33%	10	26%
Less Satisfied	1	10%	0	0%	0	0%	0	0%	1	3%
Much Less Satisfied	0	0%	0	0%	0	0%	0	0%	0	0%
Total in OD	**10**	**100%**	**15**	**100%**	**7**	**100%**	**6**	**100%**	**38**	**100%**

Q05: Since you started working here, is staff…										
Answer	**Ang Roka**		**Daun Keo**		**Koh Thom**		**Kompot**		**All ODs**	
	# HCs	***% of HCs***	***# HCs***	***% of HCs***	***# HCs***	***% of HCs***	***# HCs***	***% of HCs***	***# HCs***	***% of HCs***
Much Less Often Absent	2	20%	2	13%	1	14%	0	0%	5	13%
Less Often Absent	5	50%	8	53%	4	57%	1	17%	18	47%
Same as Before	3	30%	4	27%	2	29%	5	83%	14	37%
More Often Absent	0	0%	1	7%	0	0%	0	0%	1	3%
Much More Often Absent	0	0%	0	0%	0	0%	0	0%	0	0%
Total in OD	**10**	**100%**	**15**	**100%**	**7**	**100%**	**6**	**100%**	**38**	**100%**

Q06: Do people pay thank-you fees to the staff?										
Answer	**Ang Roka**		**Daun Keo**		**Koh Thom**		**Kompot**		**All ODs**	
	# HCs	***% of HCs***	***# HCs***	***% of HCs***	***# HCs***	***% of HCs***	***# HCs***	***% of HCs***	***# HCs***	***% of HCs***
Never	2	20%	12	80%	0	0%	2	33%	16	42%
Rarely	3	30%	2	13%	2	29%	1	17%	8	21%
Sometimes	5	50%	1	7%	5	71%	3	50%	14	37%
Often	0	0%	0	0%	0	0%	0	0%	0	0%
Always	0	0%	0	0%	0	0%	0	0%	0	0%
Total in OD	**10**	**100%**	**15**	**100%**	**7**	**100%**	**6**	**100%**	**38**	**100%**

2 Section 2: Health Centre Operating Hours

MF observes and records the times that the HC was open and closed, including breaks in the middle of the day. MF also records why the HC was closed.

MONDAY					
OD	***Ang Roka***	***Daun Keo***	***Koh Thom***	***Kompot***	***Total***
Q07: Opening Time					
7:00:00 AM	0	0	0	1	1
7:30:00 AM	1	6	1	1	9
7:45:00 AM	0	0	0	1	1
8:00:00 AM	0	0	3	1	4
8:28:00 AM	0	0	0	1	1
24-hour standby	9	9	3	1	22
Q08: Closing Time					
10:00:00 AM	0	1	0	0	1
11:00:00 AM	0	4	1	0	5
11:10:00 AM	0	0	0	1	1
11:30:00 AM	0	1	1	1	3
12:00:00 PM	1	0	1	1	3
4:30:00 PM	0	0	1	0	1
5:00:00 AM	0	0	0	2	2
24-hour standby	9	9	3	1	22
Q09: During the workday, did the HC close?					
No	6	6	4	1	17
Yes	2	8	3	5	18
No Answer	2	1	0	0	3
Q10: If yes, how many hours was the HC closed?					
No Answer	0	1	0	0	1
Zero hours (not closed)	9	9	4	1	23
1/2 Hour	1	0	0	0	1
1 Hour	0	2	1	0	3
2 Hours	0	3	0	3	6
2.5 Hours	0	0	1	0	1
3 Hours	0	0	1	2	3
Total HCs	10	15	7	6	38

Q11: Why did the HC close?

Heath staff go to have lunch and take time two hours. HC close at 5:00pm. The HC chief is stand by at HC.
Left for lunch.
Left for lunch.
Left for lunch.
Health staff left for lunch
HC opened 24 hours. The health staff work from 7:00am to 11:30. From 11:30 to 1:00 they go to have lunch but has a staff on stand by. From 1:00- 5:00 pm they work. From 7:00pm until the day break has a staff for standing by.
In the afternoon health staff did not work they left to study.
HC closed when the health staff left for lunch.
HC closed when the health staff left for lunch.
Have staff on stand by that can provide service.
HC opened 24 hours. Health staff took 2 hours and half for lunch.
HC open 24 hours and the staff can provide services.
HC has one health staff for stand by and he can provide services 24 hours.
HC closed 30mn because health staff left for lunch
The health staff left one hour for lunch but HC was still open with one staff on stand by and this staff can provide services.
HC have staff for standing by 24 hours.
HC have health staff stand by 24 hours and The health staff can provide service to client.
Health staff took 15 mn for lunch but one staff stayed as stand by.
HC has staff on stand by 24 hours and they can examine and provide the drugs to the client at all times.
HC have two staff can provide services for 24 hours: the health center is thus open 24 hours a day.
Ang Rokar did not close, because have health staff stand by 24 hours and can serve all service.
On the Monday this health center open 24 hours for service to people all time
Go for lunch and back for work at 02:00PM and finish at 05:00pm
For lunch
The resean that the health center closed to day because the staff go for lunch
The doctor and all health staff go for lunch
Health center closed because go for lunch and find the money by injection business at outside
Stop not go for work
The health center closed because we go for lunch

TUESDAY					
OD	***Ang Roka***	***Daun Keo***	***Koh Thom***	***Kompot***	***Total***
Q12: Opening Time					
7:10:00 AM	0	0	0	1	1
7:30:00 AM	1	6	1	1	9
7:40:00 AM	0	0	0	1	1
8:00:00 AM	0	0	2	1	3
8:25:00 AM	0	0	1	0	1
24-hour standby	9	9	3	2	23
Q13: Closing Time					
10:30:00 AM	0	1	0	2	3
11:00:00 AM	0	4	1	0	5
11:30:00 AM	0	1	1	0	2
12:00:00 PM	1	0	1	1	3
4:00:00 PM	0	0	1	0	1
5:00:00 AM	0	0	0	1	1
24-hour standby	9	9	3	2	23
Q14: During the workday, did the HC close?					
No	6	7	3	1	17
Yes	3	6	3	5	17
No Answer	1	2	1	0	4
Q15: If yes, how many hours was the HC closed?					
No Answer	0	2	0	0	2
Zero hours (not closed)	8	9	4	1	22
1/2 Hour	1	0	0	0	1
1 Hour	0	2	1	2	5
2 Hours	0	2	0	0	2
2.5 Hours	0	0	1	0	1
3 Hours	0	0	1	2	3
4 Hours	0	0	0	1	1
24 Hours	1	0	0	0	1
Total HCs	10	15	7	6	35

Q16: Why did the HC close?

Health staff went to commune. HC closed at 5:00pm.
Left for lunch.
Left for lunch.
Left for lunch.
Health staff left for lunch
HC opened 24 hours. The health staff worked from 7:00am to 11:30. From 11:30 to 1:00 they went for lunch but a staff remained on stand by. From 1:00- 5:30 pm they worked. From 7:00pm until the day break a staff remained on stand by.
In the afternoon, HC not open, because the HC chief went to study at province.
HC closed when the Health staff left for lunch.
HC closed when the Health staff left for lunch.
Have staff stand by and they can provide all services.
HC opened 24 hours. Health staff took 2 hours and half for lunch.
HC open 24 hours and the staff can provide services.
HC have one health staff for stand by and he can provide services 24 hours.
HC close 30mn because of health staff go to have lunch.

The health staff took time one hour for lunch but HC still open because has one staff for stand by and this staff can provide service.
HC have staff for standing by 24 hours.
HC have health staff stand by 24 hours and The health staff can provide service to client.
Took 20mn for lunch. At 9:30 mn HC chief had a meeting with all staff at health center but have one person still provided service to clients.
In the HC have staff on stand by 24 hours and they can examine and provide drugs to the client.
HC had two staff who can provide services for 24 hours.
Today HC was closed because do not have enough drugs for provide to client.
On the Tuesday this health center open24 hours for service to people all time
Event if go for lunh but we also have other doctor stand by.
For lunch and relax
The health center closed today because staff to lunch
The doctor and all health staff go for lunch
Health center closed because go for lunch and find the money by injection business at outside
Stop not go to work
On the Tuesday this health center open24 hours for service to people all time

WEDNESDAY					
OD	***Ang Roka***	***Daun Keo***	***Koh Thom***	***Kompot***	***Total***
Q17: Opening Time					
7:30:00 AM	1	5	1	1	8
7:38:00 AM	0	0	0	1	1
8:00:00 AM	1	1	3	1	6
8:05:00 AM	0	0	0	1	1
8:30:00 AM	0	0	1	0	1
24-hour standby	8	9	2	2	21
Q18: Closing Time					
10:30:00 AM	0	1	0	1	2
11:00:00 AM	1	4	2	1	8
11:30:00 AM	0	1	1	0	2
12:00:00 PM	1	0	1	1	3
4:00:00 PM	0	0	1	0	1
5:00:00 AM	0	0	0	1	1
24-hour standby	8	9	2	2	21
Q19: During the workday, did the HC close?					
No	7	8	4	1	20
Yes	2	5	3	5	15
No Answer	1	2	0	0	3
Q20: If yes, how many hours was the HC closed?					
No Answer	0	2	0	0	2
Zero hours (not closed)	8	10	4	1	23
1/2 Hour	1	0	0	0	1
1 Hour	0	1	1	1	3
2 Hours	0	1	1	0	2
3 Hours	0	1	1	3	5
4 Hours	0	0	0	1	1
5 Hours	1	0	0	0	1
Total HCs	10	15	7	6	38
Q21: Why did the HC close?					
Heatlh staff go to have lunch and some health staff go to study at Kompong Trach district. HC is working normaly in the after noon and have one staff is standing by until 5:00pm.					
Left for lunch.					
Left for lunch.					
Left for lunch.					
Health staff lef for lunch					
HC opened 24 hours. The health staff work from 7:00am to 11:30. From 11:30 to 1:00 they go to have lunch but has a staff for standing by. From 1:00- 5:00 pm they work. From 7:00pm until the day break has a staff for standing by.					
In the afternoon health staff not work they go to study.					
HC closed when the Health staff left for lunch.					
HC closed when the Health staff left for lunch.					
HC opened 24 hours. Health staff take 2 hours and half for lunch.					
HC open 24 hours and the staff can provide services.					
HC have one health staff for stand by and he can provide services 24 hours.					
HC close 30mn because of health staff go to have lunch.					
At least a staff is stand by all time, it mean that HC is open 24 hours.					
HC have staff for standing by 24 hours.					
HC have health staff stand by 24 hours and The health staff can provide service to client.					
HC have staff for providing service to client all time.					
HC has staff on stand by 24 hours and they can examine and provide drugs to clients.					
HC has two staff can provide services for 24 hours.					
HC was closed in the morning because the drugs not yet supply. In the afternoon HC work normaly.					
On the Wednesday this health center open24 hours					
go for lunh but we also have other doctor stand by.					
For lunch and relax					
The doctor and all health staff go for lunch					
Health center closed because go for lunch and find the money by injection business at outside					
Stop not go to work					
Today health center open24 hours for service to people all time					

THURSDAY					
OD	***Ang Roka***	***Daun Keo***	***Koh Thom***	***Kompot***	***Total***
Q22: Opening Time					
7:30:00 AM	1	4	1	0	6
7:50:00 AM	0	0	0	1	1
8:00:00 AM	0	0	2	3	5
8:10:00 AM	0	0	1	0	1
8:30:00 AM	0	1	0	0	1
24-hour standby	9	10	3	2	24
Q23: Closing Time					
10:00:00 AM	0	1	0	0	1
11:00:00 AM	0	3	1	2	6
11:30:00 AM	0	1	1	0	2
11:45:00 AM	0	0	0	1	1
12:00:00 PM	1	0	0	0	1
3:00:00 PM	0	0	1	0	1
4:00:00 AM	0	0	1	1	2
24-hour standby	9	10	3	2	24
Q24: During the workday, did the HC close?					
No	6	8	2	1	17
Yes	2	5	5	5	17
No Answer	2	2	0	0	4
Q25: If yes, how many hours was the HC closed?					
No Answer	0	2	0	0	2
Zero hours (not closed)	9	9	2	1	21
1/2 Hour	1	0	0	0	1
1 Hour	0	1	1	1	3
2 Hours	0	2	2	0	4
2.5 Hours	0	0	1	0	1
3 Hours	0	1	1	4	6
Total HCs	10	15	7	6	38

Q26: Why did the HC close?

Heatlh staff go to have lunch and some health staff go to study at Kompong Trach district. HC is working normaly in the after noon and have one staff is standing by until 5:00pm.
Left for lunch.
Left for lunch.
Left for lunch.
Health staff left for lunch
HC opened 24 hours. Health staff worked from 7:00am to 11:30. From 11:30 to 1:00 they go to have lunch but has one staff on stand by. From 1:00- 5:00 pm they worked. From 7:00pm until the day break has a staff for standing by.
Left for lunch.
HC closed when the Health staff left for lunch.
HC closed when the Health staff left for lunch.
Left for lunch.
HC opened 24 hours. Health staff took 2 hours and half for lunch.
HC open 24 hours and the staff can provide services.
HC had one health staff on stand by who provides services 24 hours.
HC closed 30mn because health staff left for lunch.
The health staff took one hour for lunch but HC stayed open with one person on stand by.
HC had staff on stand for 24 hours.
HC had health staff on stand by 24 hours and the health staff can provide service to client.
Health staff took 15mn for lunch but if there are clients, they can provide service immediately.
HC had staff on stand by 24 hours and they can examine and provide the drugs to the client.
HC had three staff on stand by who can provide services 24 hours a day.
HC did not close, because the health staff work 24 hours and can provide all services.
On the Thursday this health center open24 hours
go for lunh but we also have other doctor stand by.
For lunch and relax
The health center closed today because staff to lunch
The doctor and all health staff go for lunch
Health center closed because go for lunch and find the money by injection business at outside
For my checking today health center open24 hours for service to people all time.good

FRIDAY					
OD	***Ang Roka***	***Daun Keo***	***Koh Thom***	***Kompot***	***Total***
Q27: Opening Time					
6:30:00 AM	1	0	0	0	1
7:00:00 AM	0	1	0	0	1
7:10:00 AM	0	0	0	1	1
7:30:00 AM	1	5	1	0	7
8:00:00 AM	0	1	2	0	3
8:10:00 AM	0	0	0	1	1
8:20:00 AM	0	0	1	0	1
24-hour standby	8	8	3	4	23
Q28: Closing Time					
10:00:00 AM	0	1	0	0	1
11:00:00 AM	0	4	1	2	7
11:30:00 AM	0	1	1	0	2
12:00:00 PM	1	0	1	0	2
4:15:00 AM	0	0	1	0	1
24-hour standby	8	8	3	4	23
Q29: During the workday, did the HC close?					
No	7	7	4	1	19
Yes	1	5	3	5	14
No Answer	2	3	0	0	5
Q30: If yes, how many hours was the HC closed?					
No Answer	0	2	0	0	2
Zero hours (not closed)	9	10	4	1	24
1/2 Hour	1	0	0	0	1
1 Hour	0	1	1	1	3
2 Hours	0	1	0	0	1
2.5 Hours	0	0	1	0	1
3 Hours	0	1	1	4	6
Total HCs	10	15	7	6	38

Q31: Why did the HC close?

Heatlh staff go to have lunch and some health staff go to study at Kompong Trach district. HC is working normaly in the after noon and have one staff is standing by.

Left for lunch.

Left for lunch.

In the morning, when the client come need to wait 20 mn, but from 12:00 to 5:00pm health staff need to take turn for stand by at HC. From 7:00pm have one health staff stnd by at HC.

Health staff left for lunch

The HC opened 24 hours. The health staff work from 7:00am to 11:30. From 11:30 to 1:00 they go to have lunch but has a staff for standing by. From 1:00- 5:00 pm they work. From 7:00pm until the day break has a staff for standing by.

in the afternoon do have more villagers come to get drugs.

HC closed when the Health staff left for lunch.

HC closed when the Health staff left for lunch.

HC opened 24 hours.

HC opened 24 hours. Health staff take 2 hours and half for lunch.

The HC open 24 hours and the staff can provide services.

The HC have one health staff for stand by and he can provide services 24 hours.

The HC close 30mn because of health staff go to have lunch.

The health staff Take time one hour for lunch but HC still open because have one staff stand by and this staff can provide services.

The HC have staff for standing by 24 hours.

This HC have health staff stand by 24 hours and The health staff can provide service to client.

Have staff for consult and provide the drugs to client untill 8:00 o'clock.

In the HC have staff who stand by 24 hours and they can examine and provide the drugs to the client.

The HC has three staff on stand by who can provide services 24 hours a day.

HC did not close, because the health staff work 24 hours and can provide all service.

On the Friday this health center open24 hours service and provide medicine

Start from Monday to Friday this health center work only the moning time.

go for lunh but we also have other doctor stand by.

For lunch and relax (have some staff stand by)

The doctor and all health staff go for lunch

Health center closed because go for lunch and find the money by injection business at outside

Stop not go to work

SATURDAY					
OD	***Ang Roka***	***Daun Keo***	***Koh Thom***	***Kompot***	***Total***
Q32: Opening Time					
7:30:00 AM	1	4	1	1	7
8:00:00 AM	0	1	2	0	3
8:25:00 AM	0	0	1	0	1
9:00:00 AM	0	0	0	1	1
24-hour standby	9	8	3	0	20
Q33: Closing Time					
9:00:00 AM	0	1	0	0	1
10:00:00 AM	0	0	1	0	1
11:00:00 AM	0	3	2	0	5
11:30:00 AM	0	1	0	0	1
11:45:00 AM	0	0	0	1	1
12:00:00 PM	1	1	0	0	2
4:00:00 AM	0	0	1	0	1
24-hour standby	9	8	3	0	20
Q34: During the workday, did the HC close?					
No	7	7	3	0	17
Yes	1	6	2	1	10
No Answer	2	2	2	5	11
Q35: If yes, how many hours was the HC closed?					
No Answer	0	2	0	5	7
Zero hours (not closed)	9	9	4	0	22
1/2 Hour	1	0	0	0	1
1 Hour	0	0	1	0	1
2 Hours	0	1	0	1	2
2.5 Hours	0	0	1	0	1
3 Hours	0	2	0	0	2
4 Hours	0	0	1	0	1
24 Hours	0	1	0	0	1
Total HCs	10	15	7	6	38
Q36: Why did the HC close?					
HC is not working but have one staff is standing by. This staff can provide service because he is the HC chief and he lives at HC.					
The HC is not working but have one staff on stand by.					
Generally, this HC has one staff for stand by, but it is not working.					
The HC is not working, but have one staff on stand by.					
Left for lunch.					
Don't know					
The HC opened 24 hours. The health staff work from 7:00am to 11:30. From 11:30 to 1:00 they go to have lunch but has a staff for standing by. From 1:00- 5:00 pm they work. From 7:00pm until the day break has a staff for standing by.					
On Saturday people not come to take the drugs.					
HC closed when the Health staff left for lunch.					
HC closed when the Health staff left for lunch.					
HC opened 24 hours. The HC chief is the person who stand by.					
HC opened 24 hours, execpt when the health staff left for lunch or when they make report.					
The HC open 24 hours and the staff can provide services.					
The HC have one health staff for stand by and he can provide services 24 hours.					
The HC close 30mn because of health staff go to have lunch.					
can provice services.					
The HC have staff for standing by 24 hours.					
This HC have health staff stand by 24 hours and The health staff can provide service to client.					
HC chief stay alone at HC. He can consult and provide drugs to client slowly and client wait too long.					
In the HC have staff who stand by 24 hours and they can examine and provide the drugs to the client.					
The HC has two staff on stand by who can provide services 24 hours a day.					
Generally, on Satuday the normal staff do not work, but the staff that need to standy is woking.					
On the Saturday this health center open24 hours					
Every Saturday this health center not work					
go for lunh but we also have other doctor stand by.					
For lunch and relax					
Because this health center closed time					
Health center closed because go for lunch and find the money by injection business at outside					
Stop not go to work					
It really this health center closed at this times coz health staff go for their lunch					

3 Section 3: Drug Inventory Checklist

MF collects data by observing whether certain drugs are in stock. The MF must ask permission from the HC chief and Drug Manager to see the type of drug.

Item	Item in Stock?	Ang Roka	Daun Keo	Koh Thom	Kompot	Total
Q37: Ferrrous Sulfate or Fe/folate	# HCs Yes	10	15	7	6	38
	# HCs No	0	0	0	0	0
	% HCs Yes	100%	100%	100%	100%	100%
Q38: Paracetamol 100mg tablets	# HCs Yes	10	15	7	6	38
	# HCs No	0	0	0	0	0
	% HCs Yes	100%	100%	100%	100%	100%
Q39: Amoxycillin or Ampicillin 250mg*	# HCs Yes	9	13	7	6	35
	# HCs No	1	1	0	0	2
	% HCs Yes	90%	93%	100%	100%	95%
Q40: ORS Sachets	# HCs Yes	10	14	5	6	35
	# HCs No	0	1	2	0	3
	% HCs Yes	100%	93%	71%	100%	92%
Q41: Combined Oral Contraseptive (oestrogen and progesterone (COC))*	# HCs Yes	9	12	7	6	34
	# HCs No	1	2	0	0	3
	% HCs Yes	90%	86%	100%	100%	92%
Q42: Progesterone Only Pill (POP)*	# HCs Yes	9	10	6	6	31
	# HCs No	1	4	1	0	6
	% HCs Yes	90%	71%	86%	100%	84%
Q43: Artesunate/ Mefloquine	# HCs Yes	5	1	2	4	12
	# HCs No	5	14	5	2	26
	% HCs Yes	50%	7%	29%	67%	32%
Q44: Tetracycline Eye Ointment (antibiotic, not steroid)	# HCs Yes	10	7	4	6	27
	# HCs No	0	8	3	0	11
	% HCs Yes	100%	47%	57%	100%	71%
Q45: Vitamin A 100,000U*	# HCs Yes	10	14	6	6	36
	# HCs No	0	0	1	0	1
	% HCs Yes	100%	100%	86%	100%	97%
Q46: Benzyl Benzoate 25%	# HCs Yes	9	12	6	6	33
	# HCs No	1	3	1	0	5
	% HCs Yes	90%	80%	86%	100%	87%
Q47: Nylon Suture 2/0	# HCs Yes	10	10	5	5	30
	# HCs No	0	5	2	1	8
	% HCs Yes	100%	67%	71%	83%	79%
Q48: Gauze Rolls	# HCs Yes	10	13	7	6	36
	# HCs No	0	2	0	0	2
	% HCs Yes	100%	87%	100%	100%	95%

**Note: One observation is missing (leaving 14 observations) for Q39, Q41, Q42 & Q45 in one HC in Daun Keo OD .*

4 Section 4: Hygiene and Cleanliness of HC and its Surroundings

MF completes the section of the instrument by observing the HC.

Observation	*Observed?*	*Ang Roka*	*Daun Keo*	*Koh Thom*	*Kompot*	*Total*
Q49: Piles of Rubbish around the health centre	# HCs No	7	13	3	5	28
	# HCs Yes	3	2	4	1	10
	% HCs Yes	30%	13%	57%	17%	26%
Q50: Bins full or overflowing in the health centre	# HCs No	9	14	6	5	34
	# HCs Yes	1	1	1	1	4
	% HCs Yes	10%	7%	14%	17%	11%
Q51: Used needles or syringes in or around the health centre	# HCs No	10	15	7	6	38
	# HCs Yes	0	0	0	0	0
	% HCs Yes	100%	100%	100%	100%	100%
Q52: Soap not available for staff to wash hands	# HCs No	2	2	0	1	38
	# HCs Yes	8	13	7	5	
	% HCs No*	80%	87%	100%	83%	0%
Q53: Floor that needed sweeping or mopping	# HCs No	4	9	1	3	17
	# HCs Yes	6	6	6	3	21
	% HCs Yes	60%	40%	86%	50%	55%

**Note that, unlike other variables in this section, "No" would be equivalent to an unhygienic practice for availability of soap for handwashing.*

5 Section 5: Equipment

MF completes the section of the instrument by observing the equipment available at HC.

Equipment	*Equipment at HC?*	*Ang Roka*	*Daun Keo*	*Koh Thom*	*Kompot*	*Total*
Q54: A sink in the treatment room	# HCs No	1	1	3	1	6
	# HCs Yes	9	14	4	5	32
	% HCs Yes	90%	93%	57%	83%	84%
Q55: Running water	# HCs No	2	3	1	2	8
	# HCs Yes	8	12	6	4	30
	% HCs Yes	80%	80%	86%	67%	79%
Q56: A special bin for syringes	# HCs No	0	2	0	0	2
	# HCs Yes	10	11	7	6	34
	% HCs Yes	100%	85%	100%	100%	94%
Q57: A weighing scale for babies	# HCs No	0	3	0	0	3
	# HCs Yes	10	10	7	6	33
	% HCs No*	0%	23%	0%	0%	8%
Q58: Manual vacuum aspiration kit	# HCs No	10	13	7	5	35
	# HCs Yes	0	0	0	1	1
	% HCs Yes	0%	0%	0%	17%	3%
Q59: Electricity supply devices (functioning battery or solar panels)	# HCs No	1	7	0	2	10
	# HCs Yes	9	6	7	4	26
	% HCs Yes	90%	46%	100%	67%	72%
Q60: Basic delivery kit	# HCs No	0	5	1	1	7
	# HCs Yes	10	7	6	5	28
	% HCs Yes	100%	58%	86%	83%	80%
Q61: Functioning cooling device for vaccines	# HCs No	0	1	0	0	1
	# HCs Yes	10	12	7	6	35
	% HCs Yes	100%	92%	100%	100%	97%