
Can public hospitals be pro-poor? The health equity fund experience in Cambodia.

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Abstract

In many low-income countries, poor households face many barriers to use hospital services. As a result, better-off households may be the main beneficiaries of government and donor subsidies to public hospitals. We aimed to assess the extent to which health equity funds could improve access by the poor to public hospitals. This study reports the results of a benefit-incidence analysis carried out in six rural hospitals in Cambodia. In each site, a bed census survey has been conducted in order to assess the socio-economic status of the inpatients. Through an asset index we compare the profile of inpatients with the profile of the general population. In the six hospitals, the socio-economic profile of inpatients is quite similar to the rural population's profile. HEF probably contributes to this outcome, but quality of care looks like another feasible pro-poor strategy. Operators of health equity funds do not leak their assistance to non-poor. Problematic however is that some poor inpatients did not get support from the scheme. This study shows that inequity in hospital utilization can be tackled through waiver schemes.

Introduction

In many low-income countries, poor households face many barriers in their utilization of health services (Ensor and Cooper 2004). These barriers are even more compounded for accessing hospital care. Once they got information on the need to go to the hospital, the poor patients face indeed several challenges. Statistically speaking, poor people live in rural areas; for many of the poor households, distance to urban centers (where most hospitals are located) and a lack of acquaintances or friends in the

neighborhood of the hospital (to stay over for the night) will therefore be the first barriers. Second, even if the hospitals are subsidized by the government, user fees or under-table-payment may be requested. The poor households' limited ability to pay can then be a major constraint, especially for inpatient care, for which costs can be substantial. Finally poor users may also be victims of stigmatization or discrimination during their hospital stay. Deciding to forego treatment and stay at home may then be the preferential option.

Benefit-incidence studies - i.e. the study of the distribution of public resources across a classifier, e.g. socio-economic status (SES) - have shown that in most low-income countries, in spite of a higher morbidity, the poor use hospital services less than other socio-economic groups (Castro-Leal *et al.* 2000; O'Donnell *et al.* 2007; World Bank 2006). This raises a major question on the appropriateness of the institutional arrangements that establish the public hospital sector. Indeed, many governments and civil servants do probably consider accessibility for all as a core objective for government-owned health facilities. If the performance on the metric of accessibility is low, solutions must be found.

A possible solution could be the health equity funds, i.e. ear-marked funds covering the hospital utilization costs incurred by poor households. In this paper, we assess the performance of six public hospitals in rural Cambodia in terms of accessibility for the poor. The benefit-incidence analysis shows that the six hospitals are used by the whole range of socio-economic groups, including by the very poor. It is argued that the health equity funds contribute to this positive outcome through their accurate targeting, but other factors - such as the quality of care delivered by the hospital - matter as well.

Context

Cambodia is one of the poorest countries in South-East Asia. Economic growth has been impressive over the last fifteen years, yet, not everybody benefited equally. Around 35% of the population still live below the national poverty line and as in most transitional countries; inequality has increased, most notably within the rural population (World Bank 2006). As far as the health sector is concerned, the country has been engaged in an extensive reconstruction and development of its public health system since

the early nineties (Hill 2004). According to the national policy, rural hospitals are a cornerstone of the health system. Yet, progress in the performance of rural hospitals has been quite slow. In 1997, in order to loosen the constraint of scarce resources, the government introduced user fees in its health facilities. According to the last national guideline, up to 60% of revenue collected among the users may be used for salary supplements for the staff.

In well-managed hospitals, user fees have allowed ensuring a decent income for staff, who, in exchange, accepted to abandon coping mechanisms such as under-table-payment (Barber *et al* 2004; Van Damme *et al.* 2001). This has helped several hospitals to significantly consolidate their development. Yet, the strategy had its drawback: it formalized a major financial barrier for the poorest. The National Charter on Health Financing had pre-empted this problem by decreeing that poor patients should receive hospital care for free. Yet, as in many other countries (Willis and Leighton 1995; Stierle *et al.* 1999), this policy by fiat brought poor results. This is easily understandable given the staff's strong conflict of interest: any patient accepted for free meant for them a loss of income. To avoid this pitfall, the Ministry of Health and its partners have explored another track: the health equity fund (HEF).

The HEF model is straightforward: the main idea is to request no payment from poor patients (as in any waiver), but to ensure nevertheless that the hospital is compensated for each poor patient it admits (Hardeman *et al.* 2004). To realize these principles, a compensation fund financed by donor money is established. The standard approach in Cambodia is to entrust at least two key functions to the local agency in charge of the HEF: the payment of the lump sum user fees to the hospital and the identification of patients eligible for assistance (in the community and/or at the time of hospital admission). For the vast majority of schemes however, the local agency takes up other roles such as the specification of eligibility criteria or the tailoring of the assistance to the specific needs of the poor. The model is indeed flexible. It is for example possible to extend the benefit package to other items such as transport or food or even social services such as patient information and empowerment.

The HEF strategy is progressively becoming a national policy. More than one third of district hospitals are today equipped with a HEF. Ninety percent of them have been entrusted to local non-governmental

organizations (through a bidding process); others rely on grassroots organisations (Jacobs and Price 2006) or committees gathering different stakeholders (Noirhomme *et al.* 2007).

Over the last few years, the HEF experience has aroused considerable interest among scientists and policy makers beyond Cambodia. The theoretical advantages and disadvantages of the strategy have been highlighted (Meessen *et al.* 2006). Different institutional arrangements and implementation approaches have been described (Noirhomme *et al.* 2007). While there is some evidence that organisations in charge of the HEF are accurate in their identification of the poor (Jacobs and Price 2006) and that HEF have increased the proportion of poor using the hospitals (Hardeman *et al.* 2004; Noirhomme *et al.* 2007), a proper and independent benefit-incidence analysis is still lacking (Gwatkin *et al.* 2005). More evidence on the performance of the strategy in terms of targeting would obviously consolidate the credentials of the strategy among key stakeholders.

Methods

SITES AND DATA COLLECTION

This study was part of a wider effort to document hospital performance and its determinants in rural Cambodia and China. The key postulate of the “Hospitals in Change” project was that performance - defined in a multidimensional way - is to a large extent the result of institutional arrangements that set the hospital as an organisation.

In Cambodia, six rural hospitals were selected for thorough case studies. Three of the hospitals (CPA 2) provide a complementary package of activities quite similar to the package usually delivered by health district hospitals in low-income countries: internal medicine, pediatrics, maternity and surgery (e.g., caesarean section, hernia) services, with the necessary equipment and support services (laboratory, X-Ray, ultrasound, blood transfusion). The other three hospitals (CPA 3) used to be provincial hospitals; they have a greater amount of beds, have some specialists among their staff and provide a larger package of services.

The selection of the six cases was purposive: as the main goal was to identify, understand and assess best practices, hospitals considered as ‘good performers’ were favored. Variation in terms of institutional arrangements

was secured to gain maximal insight from the comparison (Vigour 2005). For example, at the stage of selection (early 2003), only three hospitals had a full-fledged HEF at hospital level: Sotnikum, Pearang and Pursat. Yet, reality is sometimes much more dynamic than research. By the time of data collection, Kirivong had evolved from a HEF funded through private donations collected by local pagodas (Jacobs and Price 2006) to a HEF funded by donor aid; Mongkul Borei hospital had a well-financed HEF (which started mid-2003); and Takeo HEF, which had struggled since its inception with underfunding, had at last secured more resources for the year 2005.

Table 1. Key indicators for the six hospitals (2004)

	Kirivong	Mongkul Borei	Pearang	Pursat	Sotnikum	Takeo
Number of beds	64	195	41	162	95	154
Number of staff	37	143	28	116	51	168
Package of activities	CPA ^a 2	CPA 3	CPA 2	CPA 3	CPA 2	CPA 3
Number of admissions	4,978	4,156	2,034	3,729	3,402	8,691
Admission rate (denominator: health district population)	2.4%	1.8%	1.1%	1.4%	1.4%	4.6%
Bed Occupancy Rate	123%	61%	77%	45%	95%	100%
Inpatient days/staff	776	328	463	291	513	452
Proportion of total revenue from government & donor	76%	73%	66%	73%	70%	58%

^a CPA, complementary package of activities

Table 1 provides a summary of some key variables for 2004. The number of beds and staff gives a good indication of the variable size of the hospitals. The bed occupancy rate and number of inpatient days/staff can be seen as productivity indicators. Two CPA 3 hospitals, Mongkul Borei and Pursat, are performing worse on this metric. Across indicators, Kirivong and

Takeo hospitals perform particularly well. Located close to each other, they attract different kinds of patients. Takeo hospital is renowned in Cambodia for its surgical capacity. For such services, its catchment area goes far beyond the district (see Table 2). This orientation towards surgery explains the high percentage of income raised from user fees by this hospital (42%).

In Cambodia, a key research question for the Hospitals in Change project was the extent to which the six public hospitals were really accessible by all. Given the significant contribution of the government in the funding of public hospitals (see Table 1), this issue of access was also an issue of fairness in terms of benefiting from public resources. The main hypothesis under test was whether the institutional configuration 'public hospitals with user fees + exemption decree + HEF' was sufficient to overcome the main barriers faced by the rural poor.

In each hospital, a socio-economic bed census was carried out. The bed census technique consists in "a cross-sectional snap-shot of the utilization of hospital beds on one particular day" (Buvé and Foster 1995). A key advantage of the technique is that it allows to have some basic and rapid information on the profile of inpatients in a hospital at a very low cost (Pannarunothai 1995). The main limit of the technique is its bias in favour of pathologies or conditions requiring longer lengths of stay. Other limits are reviewed in our discussion section.

Data were collected both on the patient (age, gender, principal diagnosis...) and the household level (composition, literacy, occupation, asset ownership, health seeking behaviours for the episode of illness and HEF status). The surveyor was also requested to produce a subjective judgement whether the inpatient was very poor, poor or better-off. In the smallest hospitals (Krivong and Pearang), the bed census was conducted twice in order to increase the sample size (see Table 2); a time lag of at least three months was respected to avoid recruiting the same inpatient twice. Data were collected by the same surveyors in the six hospitals.

Table 2. Key bed census data for the six hospitals

	Kirivong	Mongkul Borei	Pearang	Pursat	Sotnikum	Takeo
Dates of the bed census	02/02/'05 02/06/'05	24/03/'05	08/12/'04 01/06/'05	17/03/'05	17/05/'05	31/01/'05
Sample size	124	122	69	67	72	135
Living in the health district	89.4%	40.5%	75.3%	80.3%	63.4%	32.3%
Patients who benefited from a partial or total fee waiver	36%	53%	29%	51%	31%	1%

DATA ANALYSIS

For each hospital, our main research questions were the three following ones: (1) what is the SES of hospital inpatients and more particularly, do the poor and very poor manage to get access to the hospital; (2) what is the SES of the HEF beneficiaries, and more particularly, are there some false positives (non-poor inpatients receiving assistance); (3) which proportion of the very poor users receive some support from the HEF, and conversely are there some false negatives (very poor inpatients receiving no assistance)?

Benefit-incidence analysis mainly consists in a comparison of the SES of the intervention beneficiaries and the SES of the reference population. As the bed census was providing us information on the beneficiaries only, we had to find a second database incorporating information on the SES of the rural population in Cambodia. After removal of the urban households, the Cambodia Socio-Economic Survey 2003-2004 (CSES) met this criterion (Ministry of Planning 2006). Interestingly enough, situating beneficiaries of an intervention relatively to a reference population does not require an absolute measure of the individual SES (e.g. monthly income); the sole requirement is to have the score of each beneficiary on an index that ranks individuals (or households) of the general population from the poorest till the richest.

Running a principal component analysis on a selection of asset variables is today the recommended approach to build such an index (Filmer and Pritchett 1998; Vyas and Kumaranayake 2006; Zeller *et al.* 2006). A key

advantage of asset variables is that they are easy to collect. One skips the tedious collection of income, consumption or expenditure data; yet, asset ownership still leads to a quite good indication of the long-run household living standard. Contrary to the current approach in asset index research, but in line with standard methodology in sciences as diverse as health care research (Munro 2005), psychology and social sciences (see for example Kim and Mueller 1978a, Kim and Mueller 1978b) we opted for using PCA the way it was intended originally, i.e. as an exploratory (factor analysis) technique. So we did not assume from the start that all the assets would measure one and only one dimension or concept (presumably SES); we let the structure of the data instead unfold from the data. If in the asset data more than one component was hidden - which, we argue, very often is the case in this type of data -, we would select only the items that measured unequivocally the subscale that interested us here: SES. Other items would be dropped. For the exact way of handling this selection- and dropping process, through factor analysis and internal coherence testing of the scale (the latter with Cronbach's alpha as the main measure), we refer to the literature mentioned above.

First of all, we assessed the informative content of the asset variables present in the CSES. More than 30 variables were available. We ran a principal component analysis on this extensive set of variables for the rural households (n=11,831). As expected, the first principal component (or factor) was capturing a socio-economic dimension; yet, the percentage of variance explained was low (less than 12%) and many of the asset variables had quite low loadings (sometimes below the minimal 0.18 recommended in the principal component analysis literature) (Burt-Banks criterion, see Child, 1990). We removed variables with low loadings to end up eventually with a principal component explaining 33% of the variance, a relatively high percentage in comparison with other studies (McKenzie 2005; Vyas *et al.* 2006). All the remaining 13 items loaded high on the component (above 0.4). Then we compared this list of 13 items with the variables collected in the bed census. Whereas initially, both surveys had ten variables in common, after the removal of variables in the CSES with a low loading, only five similar variables remained: phone (dichotomic), TV (dichotomic), motorbike (dichotomic), the quality of roof and the quality of floor (ordinal). The five items common to both datasets that did not load well on this component were: 'having a bicycle', 'having an oxcart' - these clearly do not differentiate

very well in the Cambodia countryside - and, rather surprising, also the amounts of animals owned by a household (cattle, draft animals, pigs). We could hypothesize that this phenomenon is due to the fact that two categories have few animals in the countryside, i.e. the very poor and some of the well-off (with non-farming related jobs). Such a nonlinear relationship between the SES status and animal ownership cannot be well captured by a principal component analysis (a technique for linear relationships). The fact that the quality of the dwelling differentiates very well between rural households was not a surprise: any journey in the countryside can confirm that investing in housing is one of the first investments that Cambodian households make today when their daily lot improves (World Bank 2006). The rapid spread of mobile phones and motorbikes in the rural 'middle-class' is providing other well-discriminating variables (at least for the time being).

The next step was to assess the acceptability of an index based on only these five common assets. We ran the principal component analysis on the CSES and it appeared that the first component was a clear SES factor (explained variance: 40%; loadings over 0.50 for each item). A bit uncomfortable with an index based on such a short list of assets (other studies usually use around 15-20 variables; yet, without checking for the loadings), we tested on the subsample of 11,831 households of the CSES whether the 5-item and 13-item SES indexes corresponded. For that purpose, the individual SES scores were constructed for each index by summing the products of each component score coefficient with the standardized values of the related asset. Correlation between the two indexes proved to be very high (0.814), which confirmed that the 5-item index might be a good proxy for the 13-item one. An additional test was performed in which both indices (each divided into two categories, the lowest 40% and the top 60% in terms of SES status) were matched with each other in a 2 x 2 table. The 'hits' (= on the diagonal) amounted to 88.3% (= 33.4% + 54.9%), the 'misses' (not on the diagonal) amounted to 11.7% (= 5.3% + 6.4%), which was deemed an acceptable figure.

The third step was to calculate the SES scores of the 548 inpatients of the bed census for whom there were no missing data. We multiplied their standardized self-reported assets by the same component coefficient scores obtained from the principal component analysis on the CSES and aggregated the results to obtain their individual score on the five-asset index.

Results

The bed census provides us with two indicators for the SES of the inpatient: the score on the five-asset index and the subjective assessment by the surveyor. The two indicators are available for 548 inpatients. For 36 more inpatients, we have the surveyor's assessment only.

As far as the asset index is concerned, the SES in Tables 3-5 is given by the comparison of the individual score relatively to the distribution of scores across the whole reference population. According to the research question, this reference population has been divided in quintiles or terciles. An example might clarify this procedure: if the cutoff points for quintiles in the total rural population were, for instance $-.80$, $-.40$; $.30$ and $.90$, then we compared the individual score of the inpatient (calculated with the same weights) with *the same* cutoff points to appreciate to which quintile he belongs. For terciles obviously we only need two cutoff points.

While the use of the 11,831 rural households of the CSES to calculate the index ensures consistency of our study, it may be unfair to hospitals with relatively richer populations in their surroundings. As a robustness test, we have explored (1) whether the cutoff points were very different if the principal component analysis was carried out on provincial data instead of national ones; (2) whether the classification of the bed census inpatients into quintiles or terciles was very different with these 'provincial' indexes. Results were remarkably different only for the two hospitals in Takeo Province (Krivong and Takeo hospitals), and for their scores in Table 3 only. This is consistent with the fact that the population in Takeo Province has a higher SES than the population in the four other provinces of our study (World Bank 2006).

Table 3 gives the distribution of the inpatients by SES.

Table 3. SES of inpatients in the six hospitals

Inpatients belonging to the	Hospitals						Total
	Kirivong	Mongkul Borei	Pearang	Pursat	Sotnikum	Takeo	
40% poorest (asset index)	56 45.9%	55 54.5%	24 36.9%	22 33.8%	25 37.9%	29 22.5%	211 38.5%
60% least poor (asset index)	66 54.1%	46 45.5%	41 63.1%	43 66.2%	41 62.1%	100 77.5%	337 61.5%
Total	122	101	65	65	66	129	548
Very Poor group (surveyors' assessment)	20 16.1%	56 46.7%	17 24.6%	14 21.2%	11 15.5%	14 10.4%	132 22.6%
Poor group (surveyors' assessment)	72 58.1%	43 35.8%	39 56.5%	40 60.6%	36 50.7%	86 64.2%	316 54.1%
Better-off group (surveyors' assessment)	32 25.8%	21 17.5%	13 18.8%	12 18.2%	24 33.8%	34 25.4%	136 23.3%
Total	124	120	69	66	71	134	584

We see that the six hospitals are quite balanced in terms of SES of their inpatients. Mongkul Borei hospital looks particularly pro-poor. Takeo hospital is the hospital with the lowest proportion of very poor inpatients. Yet, if one uses the 'provincial index', Takeo fares as well as others (39,4% patients belonging to the 40% poorest) while Kirivong's figure goes up to 61,4%.

Out of the whole sample of 589 inpatients, 187 reported assistance of some kind from a HEF. All of them benefited from a partial or full fee waiver. Other kinds of assistance were rarer: 45 reported assistance for their transport and 32 some assistance for food. Table 4 gives the socio-economic distribution of the more or less 30% of inpatients assisted by a HEF. We see that most of the assistance went to very poor or poor patients. If we look at the highest asset index tercile, we cannot exclude some leakage (6.5% in total). However, the surveyors, whose judgment rested on a broader set of indicators (including things not reported in the survey, like the respondent's clothing, attitude and oral expression), estimated that leakage was non-existent (1%).

Table 4. SES of HEF beneficiaries

HEF beneficiaries belonging to the	Hospitals						Total
	Kirivong	Mongkul Borei	Pearang	Pursat	Sotnikum	Takeo	
66% poorest (asset index)	43 97.7%	51 100%	17 89.5%	26 78.8%	18 94.7%	2 100%	157 93.5%
33 % better-off (asset index)	1 2.3%	0 0%	2 10.5%	7 21.2%	1 5.3%	0 0%	11 6.5%
Total	44	51	19	33	19	2	168
Very poor group (surveyors' assessment)	15 33.3%	43 67.2%	10 50%	11 32.4%	9 40.9%	1 50%	89 47.6%
Poor group (surveyors' assessment)	30 66.7%	19 29.7%	10 50%	23 67.6%	13 59.1%	1 50%	96 51.3%
better off group (surveyors' assessment)	0 0%	2 3.1%	0 0%	0 0%	0 0%	0 0%	2 1.1%
Total	45	64	20	34	22	2	187

Table 5 focuses on the poorest inpatients. It gives the proportion of inpatients assisted by the HEF in these sub-groups. We see that there is a pattern of under-coverage across the six hospitals. Remarkable is the huge under-coverage in Takeo. In fact, January 2005 was the month of a new start for the HEF in Takeo. The new contract with the funding international NGO really took effect the month following the bed census.

Table 5. HEF status of poor patients

Number and proportion of assisted patients among the	Hospitals						Total
	Kirivong	Mongkul Borei	Pearang	Pursat	Sotnikum	Takeo	
40% poorest (asset index)	29	36	11	14	13	1	104
	51.8%	65.5%	45.8%	63.6%	52%	3.4%	49.3%
Very poor group (surveyors' assessment)	15	43	10	11	9	1	89
	75%	76.7%	58.8%	78.5%	81.8%	7.1%	65.1%
Poor group (surveyors' assessment)	30	19	10	23	13	1	96
	41.6%	44.1%	25.6%	57.5%	36.1%	1.1%	30.3%

Discussion

Our study evidences that the six rural hospitals under scrutiny are used by the poor. HEF is probably key to this positive result, yet the Takeo example shows that a HEF is not a necessary condition for such an outcome. The benefit-incidence analysis on the sub-group of patients having received assistance from the HEFs confirms that the HEF operators are successful in concentrating their assistance on very poor and poor households. This very limited leakage could in fact be the result of a too restrictive selection of beneficiaries by HEF operators. Our study shows indeed that among hospitals patients, many 'non-assisted' users have an asset index score equal to those who received assistance. If the sole objective of the HEF is to enhance access to hospital care, this under-coverage is not an issue (the real under-coverage lies in poor sick persons never arriving at the hospital). It is a problem though if fairness and protection of households against catastrophic healthcare expenditure are other objectives pursued by the HEF.

Our study has some limits, notably (1) the rather narrow nature of the research question; (2) the data collection method and (3) the data analysis.

As far as the first problem is concerned, one can only stress the danger to draw too hasty conclusions on the basis of the analysis of one single dimension of performance. In a health system with freedom of choice for the users (as is the case in Cambodia), one could imagine an extreme case of a hospital with a very good benefit-incidence result: the hospital that performs

so poorly that it would be used only by those who have no other option, i.e. the very poor. What matters in terms of equity is of course utilization of *effective* services. This bed census does not provide any information to assess the 'effectiveness of care' dimension; henceforth other parallel research was conducted, under the Hospitals in Change Project which documented other dimensions of hospital performance (not reported here).

Some indicators of Tables 1 and 2 allow us to put the benefit-incidence score into perspective. Let us do this for four hospitals: Kirivong, Takeo on one side and Mongkul Borei and Pursat on the other side. If one takes the admission rate as an indication of the performance of a hospital in attracting its target population, Takeo appears to perform much better than the five other hospitals. The high quality of care delivered in Takeo, especially for surgical cases, is a well-known fact in Cambodia. This performance is due to some institutional factors, but not exclusively (Barber *et al.* 2004). Qualitative data collected by the Hospital in Change project has revealed that leadership is crucial as well. Whatever the exact reason might be, the case of Takeo hospital shows that discussing accessibility without connecting it to quality of care could be misleading. Takeo hospital brings indeed an important lesson: if the quality of care is high, poor and very poor people may decide to use the hospital, despite the low odds to get a user fee waiver. This shows that more attention to quality of care in rural health facilities can be a pro-poor strategy.

Kirivong is a small rural hospital. It has not the national prestige of the neighboring Takeo hospital and recruits patients among the neighboring population only. Yet, the hospital is very much appreciated by the local population. The case mix of inpatients is obviously less complicated than in Takeo hospital (hence, the much higher inpatient days/staff), but this is exactly what is expected from a CPA 2 hospital. Established in a remote area, this well-functioning hospital equipped with a HEF brings a lot of benefits to very poor and poor people.

The situation of Mongkul Borei and Pursat hospitals is different. Partly thanks to the support provided, respectively, by the International Committee of the Red Cross and *Médecins Sans Frontières*, these two hospitals were among the best performing rural hospitals in the early nineties. After the departure of both agencies, the situation degraded. Furthermore, in the late nineties, Mongkul Borei hospital suffered from bad management and poor leadership. For the new director, it took several years to rebuild the

reputation of the hospital. Our benefit-incidence study shows that both hospitals are massively used by very poor (Mongkul Borei) or poor (Pursat) households and that a majority of these very poor or poor users got assistance from the HEF. In fact, for both hospitals, the HEF patients constitute more than 50% of the practice (see Table 2). Other insights gathered from routine data (see the low bed occupancy rates in Table 1) and qualitative information, make us wonder whether Mongkul Borei and Pursat hospitals do not partly suffer from the syndrome of 'poor hospital for the poor'. Obviously, only a few better-off people use the hospital (despite idle capacity). Others probably prefer to opt for local private clinics. The HEF may have contributed to boosting the utilization of Mongkul Borei and Pursat hospitals. This is of course welcome, but a more balanced socio-economic mix of utilization is probably what the hospital management teams should aim at. This would better meet the mission assigned by the Ministry of Health, and also constitute a step towards gaining stronger support among the local elites and the community. Since Hirschman's seminal book on *voice* and *exit*, one knows that it is never good for the future of an organization when the better-off prefer the exit route to voicing their frustration (Hirschman 1970).

There are also some limits typical of the data collection method. As a snapshot, a single bed census does not allow for identifying seasonal effects. It is well-known that seasons can create supplementary barriers in rural areas (Chambers 1979; Sauerborn *et al.* 1996). While we do not believe that this weakness impedes the inter-hospital comparison or invalidates our main message, we cannot exclude that the socio-economic profile of hospital users varies across seasons in Cambodia, especially in periods of floods. The answer to this parallel question could come from the utilization of the bed census technique as a routine monitoring instrument in Cambodia (e.g., to control the performance of non-governmental organizations subcontracted to operate HEFs). Another problem is the reliance on declarations by the interviewees. Even if the surveyors informed respondents clearly that they were external both to the hospital and the HEF, one can never exclude that some respondents lie or misreport their situation. Data collection carried out at home (see for example Ir *et al.* in this book) is for sure a better option. Finally, the samples in the small hospitals were quite small.

Lastly, there are also the limits stemming from the data analysis. Our asset index is quite basic. Five assets are not as many as we would have liked

to have in our index. It is maybe more appropriate to talk of an indicator of socio-economic status rather than of a measurement *stricto sensu*. While we believe that this index is robust enough to provide a general idea on the benefit-incidence of subsidies to public hospitals and of HEF assistance (as it is confirmed by the subjective assessment by the surveyors), we would certainly not pretend that this is a golden standard allowing to invalidate other measurements, including the assessment made by the HEF social welfare workers. Their assessment is in fact much more informed than ours. First, households may have been interviewed by the NGO welfare worker or a surveyor at home (this is true at least for all the households pre-identified in the community). This home visit has allowed the surveyor to directly observe some variables reported by the interviewee (e.g., type of dwelling). Second, while all HEF operators collect information on assets (partly the same ones as the ones used in our index), they extend their assessment to other variables too such as the household structure, its income and food security (for more details on criteria, see Jacobs and Price 2006; Noirhomme *et al.* 2007 and Men in this book). Third, the face-to-face interview conducted by the HEF welfare worker usually also aims at identifying the specific needs of the eligible patients. The conduct of such an interview is more open than the administration of a structured questionnaire, and allows for including a 'gut feeling'. Eventually, while some HEF operators use an explicit scoring of the various variables, we would not pretend that their experience-based approach is inferior to our very rough statistical technique. The conclusion that they fail to identify many poor among the inpatients must therefore be taken cautiously.

As far as policy is concerned, our findings reinforce some key orientations taken by the Ministry of Health of Cambodia, old orientations such as the coverage of the countryside with rural hospitals, and more recent ones, such as the HEFs.

The five HEFs reviewed in this study are highly effective in reaching the poor. This fits the emphasis put recently by the Ministry of Health and its international partners on developing a pro-poor health system. More generally, the strategy nicely tallies with the national poverty reduction agenda. Another key argument in favor of the HEF approach is the quality of its implementation across the country. Our study shows that HEF operators cannot be accused of leakage to non-poor; this fact can only reinforce

political support among stakeholders, including the community and the hospital staff.

This study has also some operational meaning for the government and agencies active in the implementation of the HEFs. For example, the study validates the bed census as a way to monitor the performance of the HEF operators in their targeting. Asset indexes seem also an interesting route for crude comparison across scheme operators. However, one must not ignore that this study has taken place at a very specific point in time: economic development is so rapid in Cambodia that our five indicators may not discriminate so well anymore in a few years from now. Our study raises also the question of how one should address the variation in terms of economic development across regions. Should one use 'provincial indexes' or a single index for the whole country? We favour the use of the all-country index. Indeed, HEF makes up just one component of a more global targeting strategy. It is in fact the whole strategy, which combines geographical targeting (rural hospitals), categorical targeting (inpatients), self-selection (users of public hospitals) and proxy-means test (HEF), which must be assessed. Using a single index will for example give more support to the government strategy of developing hospitals in poor rural areas.¹

It is still unclear to what extent the strategy developed in Cambodia is relevant for other countries (Noirhomme and Thomé 2006). More experiments are needed. An important message is that waivers relying on individual assessment should not be too hastily discarded as a route to ensure accessibility by the poor. There are obviously design issues that must be solved. Regulation only is not sufficient. An external earmarked budget to compensate the health care provider is a prerequisite. Entrusting the identification of the beneficiaries to an organization whose main commitment is to help the poor seems also vital.

¹ We do not deny however that a critical size in terms of beds, technical capacity and skilled workforce probably applies. As highlighted by the Takeo case, quality of care is a key determinant of hospital utilization. Multiplying or even maintaining very small rural hospitals is probably not the way forward for Cambodia. Economic development, urbanization and the road network will indeed reshape the actual coverage map.

Conclusions

Limited accessibility by the poor to hospital care in low-income countries is not inevitable. Yet, solutions must probably be more comprehensive than what they have been so far in many settings. Identifying the poor, purchasing health care on their behalf, assisting them to overcome the various barriers are functions that deserve an agency whose prime mandate lies in addressing these issues. This would allow hospital managers to focus on their core mission: to deliver high quality of care to the patients. Clarifying societal missions of public hospitals is one of the paths to their better overall performance.

The Cambodian experience shows that nice partnerships between the public health care providers and civil society groups can be developed at this level. In rural areas, non-governmental and grassroots organizations could be particularly helpful to the poor. Through their support for such multi-actor models, donors could simultaneously achieve several goals dear to them: improve the health of the poor, obtain accountability from public health care providers, develop the private non-for-profit sector, empower the civil society and consolidate the development of a better connected web of actors in the social sector. We believe that this is a real cornucopia of benefits.

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