

Out-of-pocket medical expenses for inpatient care among beneficiaries of the National Health Insurance Program in the Philippines

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Accepted	11 July 2012
Objective	The National Health Insurance Program (NHIP) in the Philippines is a social health insurance system partially subsidized by tax-based financing which offers benefits on a fee-for-service basis up to a fixed ceiling. This paper quantifies the extent to which beneficiaries of the NHIP incur out-of-pocket expenses for inpatient care, and examines the characteristics of beneficiaries making these payments and the hospitals in which these payments are typically made.
Methods	Probit and ordinary least squares regression analyses were carried out on 94 531 insurance claims from Benguet province and Baguio city during the period 2007 to 2009.
Results	Eighty-six per cent of claims involved an out-of-pocket payment. The median figure for out-of-pocket payments was Philippine Pesos (PHP) 3016 (US\$67), with this figure varying widely [inter-quartile range (IQR): PHP 9393 (US\$209)]. Thirteen per cent of claims involved very large out-of-pocket payments exceeding PHP 19 213 (US\$428)—the equivalent of 10% of the average annual household income in the region. Membership type, disease severity, age and residential location of the patient, length of hospitalization, and ownership and level of the hospital were all significantly associated with making out-of-pocket payments and/or the size of these payments.
Conclusion	Although the current NHIP reduces the size of out-of-pocket payments, NHIP beneficiaries are not completely free from the risk of large out-of-pocket payments (as the size of these payments varies widely and can be extremely large), despite NHIP's attempts to mitigate this by setting different benefit ceilings based on the level of the hospital and the severity of the disease. To reduce these large out-of-pocket payments and to increase financial risk protection further, it is essential to ensure more investment for health from social health insurance and/or tax-based government funding as well as shifting the provider payment mechanism from a fee-for-service to a case-based payment method (which up until now has only been partially implemented).
Keywords	National Health Insurance Program, Philippines, out-of-pocket payment, insurance claim records

KEY MESSAGES

- Under the current National Health Insurance Program (NHIP) benefit scheme in the Philippines, which offers benefits on a fee-for-service basis up to a fixed ceiling, NHIP beneficiaries are not completely free from the financial risk of having to make potentially large out-of-pocket payments for inpatient care.
- Several characteristics of both patients and hospitals are associated with the likelihood of making an out-of-pocket payment and/or the amount of this payment, despite the NHIP's attempts to mitigate this with different benefit ceilings based on hospital level and disease severity.
- To reduce large out-of-pocket payments, it is essential to fully shift the provider payment mechanism away from fee-for-service to an as yet only partially implemented case-based payment method.

Introduction

The utilization of health care services can cause severe financial hardship or impoverishment, especially when it is associated with having to make potentially large and unpredictable out-of-pocket payments (Wagstaff and van Doorslaer 2003; Xu *et al.* 2003). Fear of incurring a significant financial burden for health care or falling into a 'medical poverty trap' (Whitehead *et al.* 2001) can cause ill individuals to either delay or refrain from seeking essential medical services (Hjortsberg 2003; Palmer *et al.* 2004). In 2005, in response to this situation, the 58th World Health Assembly adopted a resolution urging member states to establish prepayment methods for health care financing to help achieve universal coverage, so that all individuals who needed to access health services could do so without the risk of experiencing potentially severe financial consequences (World Health Organization 2005).

In recent years many countries have developed prepayment methods of health care financing using tax-based funding or social health insurance schemes (Carrin *et al.* 2008; Kutzin *et al.* 2009). However, out-of-pocket payments continue to be the principal means of financing health care throughout much of Asia (van Doorslaer *et al.* 2007), including the Philippines, where 54% of total health expenditure was in the form of out-of-pocket payments in 2007 (Philippines National Statistical Coordination Board 2010). The seriousness of this situation can be gauged by the fact that the World Health Organization has suggested that out-of-pocket costs should not exceed 20–30% of total health expenditure if universal coverage is to be attained (World Health Organization 2009; World Health Organization 2010b).

The National Health Insurance Program in the Philippines

This study will examine how the current National Health Insurance Program (NHIP) in the Philippines functions in terms of its benefit coverage and as a mechanism to prevent potentially severe costs being incurred for health care. The system dates back to 1995 when, in order to achieve universal coverage, the Philippine government established the Philippine Health Insurance Corporation (PhilHealth) to manage and develop the NHIP—a social health insurance system whose premium contributions are earmarked exclusively for health payments among its beneficiaries—as a successor to the Medicare program which had been founded in 1969 and

which mainly targeted employees in the formal sector (Obermann *et al.* 2006).

As part of its remit, PhilHealth expanded membership eligibility to five program categories (Philippine Health Insurance Corporation 2009c): an employed sector program for all workers formally employed in the government and private sector, where the premium is shared between the employer and employee; a sponsored indigent program for the poor as determined by local social welfare development offices, where the premium is paid by PhilHealth and local government bodies or private donors on behalf of the poor; a lifetime program for retirees (free membership), where benefits are funded from the premium contributions made to other programs; an overseas Filipino worker program; and an individual paying program for all Filipinos not eligible for one of the four other programs such as the self-employed and farmers. The insurance premiums of the latter two programs are fully paid by members. The premium contributions are pooled into one fund and managed by PhilHealth independently from other tax-funded government budgets for health (Figure 1). The NHIP in the Philippines can be considered as a mixture of social health insurance and tax-based financing, as the NHIP budget consists primarily of premium contributions from members (which constituted 93% of the total income of the NHIP in 2009) and partially of tax-based government subsidies for the sponsored program (7%) (Philippine Health Insurance Corporation 2010). Thus it is not a 'pure' social health insurance system, where program funds come solely from the premium contributions of the members (Kutzin *et al.* 2009; Wagstaff 2010).

The NHIP provides insurance benefits primarily for inpatient care. The most recent *Demographic and Health Survey* conducted in 2008 (Philippines National Statistics Office and ORC Macro 2009) reported that 4.1% of the population had utilized inpatient care in the previous 12 months, while 7.9% of the population had utilized outpatient care in the previous 30 days. The average cost per episode of inpatient care was 16 802 Philippine Pesos (PHP) (US\$374) per person, while the average cost per episode of outpatient care was PHP 1872 (US\$42) per person (exchange rate: US\$1 = PHP 44.89 as of 1 July 2008, Central Bank of the Philippines).

Basically the NHIP reimburses the cost of care on a fee-for-service basis up to a specified amount with separate ceilings for room and board, drugs and medicines, X-ray and laboratory tests, operating room fees and doctors' fees. Each benefit ceiling is decided based on the severity of the

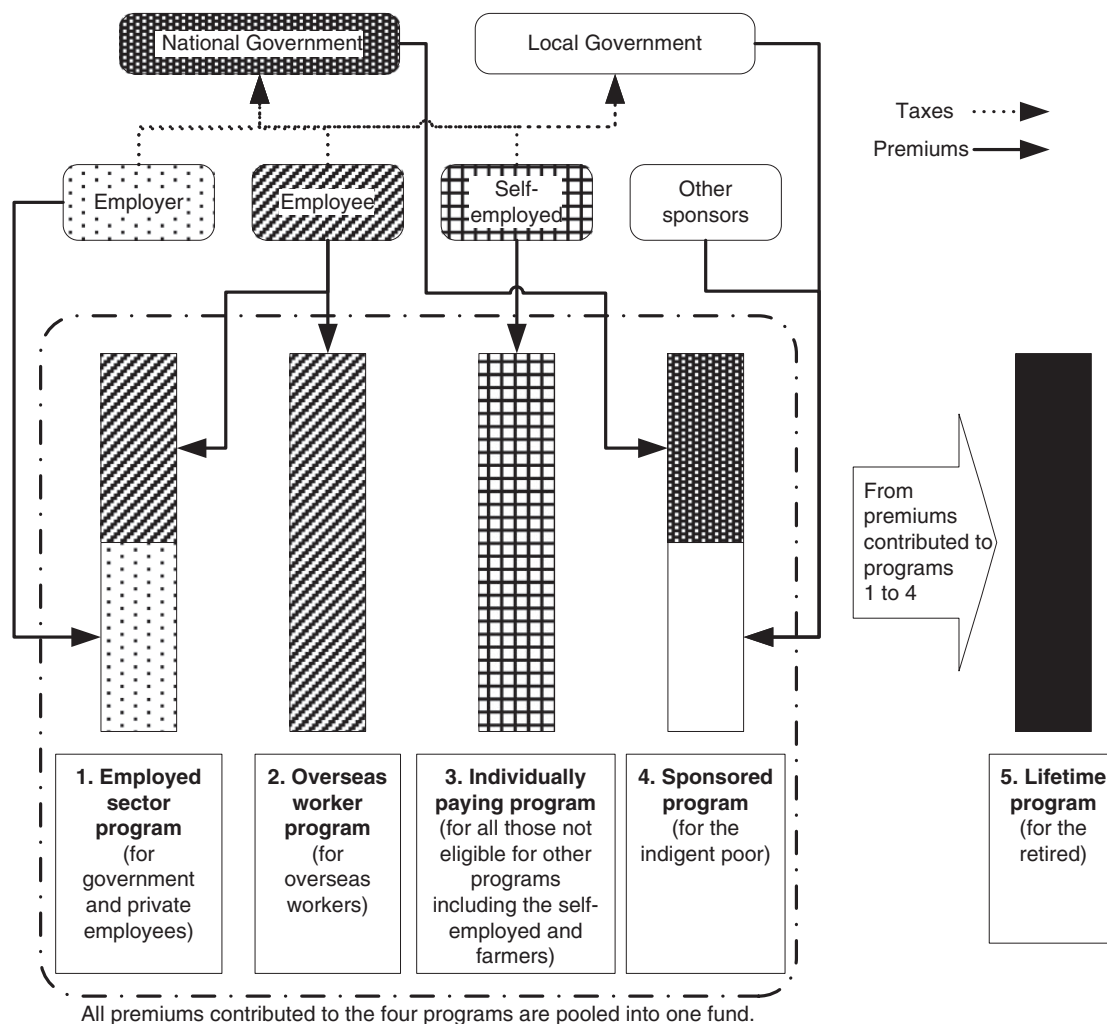


Figure 1 Premium contribution scheme of the Philippines' NHIP

disease and the classification (level) of hospitals (Philippine Health Insurance Corporation 2006; Philippine Health Insurance Corporation 2009a) (Figure 2). Thus, the more severe the disease and the higher the level of hospital used, the higher the benefit ceiling. For example, the benefit ceilings for drugs and medicines when patients are in secondary hospitals are PHP 3360 (US\$75) for case type A (simple) diseases, PHP 11 200 (US\$249) for case type B (moderate) diseases and PHP 22 400 (US\$499) for case type C (severe) diseases. These ceilings increase when patients are in tertiary hospitals: PHP 4200 (US\$94) for case type A diseases, PHP 14 000 (US\$312) for case type B diseases, PHP 28 000 (US\$624) for case type C diseases and PHP 40 000 (US\$891) for case type D (extremely severe) diseases. The benefit ceiling for case type D is not determined for secondary hospitals as hospitals at this level are not capable of treating case type D diseases (Philippine Health Insurance Corporation 2009a). The level of the benefit for inpatient care is the same regardless of membership type. However, hospital charges and doctors' fees are based on their own fee schedules and PhilHealth has no mechanism to exert control over them (Hindle *et al.*

2001; Obermann *et al.* 2006; Philippines Department of Health 2010c).

Under this system, when a charge is higher than the benefit ceiling determined by PhilHealth, patients have to pay the difference in the cost themselves. When utilizing health care services, the beneficiaries of the NHIP are therefore subject to uncertainty about whether they will face payment costs even though they are covered by health insurance. This situation has potentially serious consequences: the possibility of low financial protection diminishes the value of joining the NHIP and can exacerbate adverse selection, i.e. where lower-risk individuals who are not automatically insured will elect not to join the program. Having an imbalance with too many high-risk individuals using the NHIP has the potential to place increased financial strain on the continued provision of the whole program (Jowett and Hsiao 2007).

In December 2010, the Philippines Department of Health launched the Aquino Health Agenda: Achieving Universal Health Care for All Filipinos (Philippines Department of Health 2010a). One of the three strategic thrusts of the agenda is to increase financial risk protection. This will be

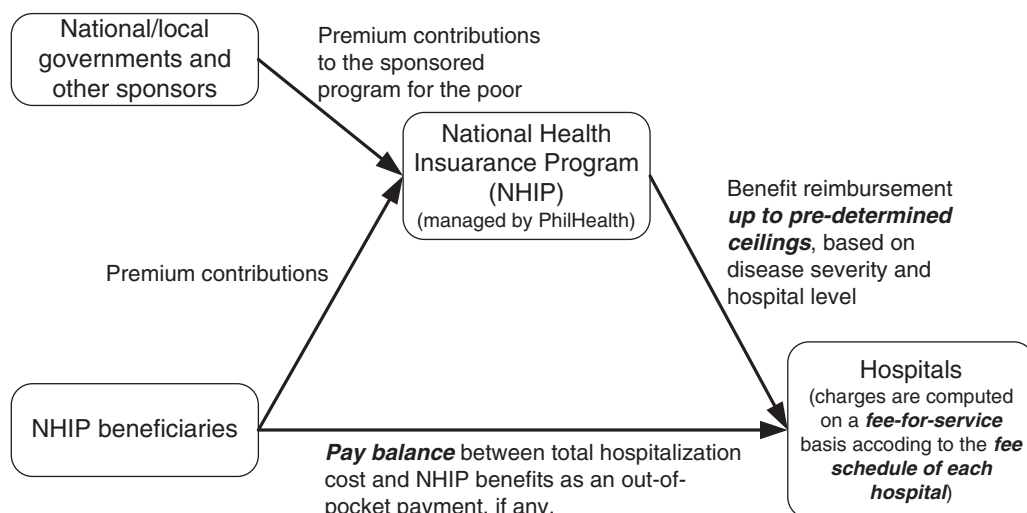


Figure 2 Flow of money for the inpatient care of NHIP beneficiaries

achieved by expanding the NHIP; specifically, by increasing both enrolment in the program and its support value, i.e. the proportion of the health care bill covered by the NHIP when restricted to a health facility (Philippines Department of Health 2010a). Ensuring the financial risk protection of NHIP members by increasing support value and reducing out-of-pocket payments is now an important focus of health policy in the Philippines.

As yet, however, little is known about the financial costs incurred by beneficiaries of the current NHIP benefit scheme. Although several studies (Liu *et al.* 2003; Wagner *et al.* 2008) have examined costs and insurance benefits among NHIP beneficiaries in connection with specific diseases, as yet no analysis has been made of out-of-pocket payments in these studies. This is an important omission, especially as a recent internal analysis conducted by PhilHealth and the Philippine Department of Health has shown that support value for inpatient care may have been as little as 36% on average in 2008 (Philippines Department of Health 2010b).

The current study aimed therefore to quantify the extent to which NHIP beneficiaries incur out-of-pocket payments for inpatient care, and to determine the support value of the NHIP. In addition, the characteristics of beneficiaries making these payments and the hospitals in which these payments are typically made are also examined. Understanding the way the current system provides financial protection is an essential first step in any attempt to expand its operation—the need for which can clearly be gauged from recent survey data which suggests that only 38% of the nationwide population were covered by the NHIP as members or dependents in 2008 (Philippines National Statistics Office and ORC Macro 2009).

Methods

Data sources

Study data were extracted from the PhilHealth inpatient claims database, where all insurance claims from accredited PhilHealth health facilities are stored electronically. All claims from NHIP

inpatient beneficiaries in Baguio city and Benguet province for all PhilHealth accredited hospitals in the Philippines with discharge dates occurring between 1 January 2007 and 31 December 2009 are included in the study. Baguio city and Benguet province are located in Cordillera Administrative Region (CAR), northern Luzon. Baguio city is an urbanized commercial center with a population of 301 926 in 2007, while Benguet is a rural province centered around agriculture with a population of 372 533 in 2007 (Philippines National Statistics Office 2008b).

As regards its economic status, CAR had a slightly higher than average household income than for the whole country in 2006 (Philippines National Statistics Office 2008a). The number of NHIP members as of December 2008 was 133 630 in Baguio city and 62 858 in Benguet province (PhilHealth Regional Office–CAR 2009). Due to their differing economic profiles, Baguio city had a higher proportion of employed sector members than Benguet province (69% and 39% of total membership in each area, respectively), while Benguet province had more sponsored indigent members (20% vs 1%) (PhilHealth Regional Office–CAR 2009). The number of NHIP members in these study sites increased during the study period as the total number of members was 165 561 in the beginning of 2007 and 199 965 at the end of 2009 (a 21% increase in 3 years) (PhilHealth Regional Office–CAR 2010). Members are allowed to include their dependents in the program without paying additional premiums. The exact number of NHIP beneficiaries including members and dependents is not known, however, due to the incomplete registering of dependents. These study sites were chosen as a matter of convenience as the lead author was participating at that time in a project to increase NHIP enrolment in the area. It should be noted that in October 2009, the study sites were affected by a strong typhoon (*Pepeng*), which was responsible for 175 reported deaths mainly as a result of floods and landslides (Cordillera Peoples Alliance 2009). The injuries and subsequent diseases caused by this natural disaster may have led to an increased number of hospital admissions during this period.

The PhilHealth claims database contains information about the charges of hospitals, pharmacies, diagnostic tests and doctors and the benefits reimbursed by PhilHealth. Out-of-pocket costs for obtaining health care were computed as the difference between the charges incurred and benefit reimbursed. Information on patient characteristics (sex, address, age, type of membership, and member or dependent status), their diagnosis [i.e. case severity where PhilHealth classifies all diseases into four groups based on their severity using ICD-10 codes (simple, moderate, severe and extremely severe)] and treatment, date of admission and discharge, hospitals used [public or private status, and the classification (level) of the hospital, i.e. primary (level I), secondary (level II) and tertiary (level III/IV)], and their location was also obtained from the claims database.

Statistical analysis

A two-part model was used to determine the size of out-of-pocket payments based on patient and hospital characteristics available in the PhilHealth claims database mentioned above (O'Donnell *et al.* 2007). This comprised a probit model to determine the probability that an individual would make an out-of-pocket payment and an ordinary least squares model, used for the sub-sample with non-zero payments, to examine the correlates of making such a payment. When doing this, the out-of-pocket payment variable was log-transformed to normalize its distribution. All analyses were performed using Stata version 10.1 (Stata Corporation, College Station, TX, USA).

Results

From 1 January 2007 to 31 December 2009, 94 531 insurance claims were made by NHIP beneficiaries in Baguio city and Benguet province for inpatient care. From these, 53 203 claims (56%) were from formally employed members, 7524 claims (8%) were from sponsored indigent members, 26 287 (28%) were from individually-paying members and overseas Filipino worker members, and 7517 (8%) were from lifetime members.

Details of the claims are summarized in Table 1. Most claims were made for treatment in private hospitals (58%). However, the share of claims for treatment in lower-level (primary and secondary) public hospitals was much higher among sponsored indigent members (17% and 13%, respectively) than among other program members. In contrast, the share of claims from sponsored indigent members for treatment in tertiary private hospitals (14%) was much lower than that among all beneficiaries (45%).

The distributions of total charges, NHIP benefits, out-of-pocket payments and the support value of NHIP (NHIP benefit in relation to total health care charges) are shown in Figure 3. The median figures for the total charges, NHIP benefit and out-of-pocket payments were PHP 8031 (US\$179), PHP 4235 (US\$96) and PHP 3016 (US\$67), respectively, with these figures varying widely. Only 14% of claims required no out-of-pocket payment, while 13% of claims involved out-of-pocket payments of more than PHP 19 213 (US\$428) which was equivalent to 10% of the average annual family income in the CAR region in 2006 (Philippines National Statistics Office 2007). The median

level of the support value per claim was 57%. However, the mean level of support value was 42% on average [where the mean value of the NHIP benefits of all hospitalizations (PHP 6901) is divided by the mean value of the cost of all hospitalizations (PHP 16 523)].

The breakdown of these figures by hospital level and case type (severity of disease), two conditions which determine benefit ceilings (Philippine Health Insurance Corporation 2006; Philippine Health Insurance Corporation 2009a), as well as by type of membership is shown in Table 2. The higher the level of the hospital, the larger the total charge, NHIP benefits and out-of-pocket payments were (excepting payments made in secondary public hospitals). The total charges and out-of-pocket payments for secondary and tertiary private hospitals were much higher than those of public hospitals of the same level, resulting in the lower support value of claims for treatment in these hospitals (58% and 40%, respectively) compared with other types of hospital (79% to 93%).

In terms of disease severity case type, those patients with case type B (moderate severity) diseases made higher out-of-pocket payments than patients with either case type C (severe) diseases or case type D (extremely severe) diseases. Among the four types of membership, sponsored indigent members had the lowest out-of-pocket payment costs [median: PHP 963 (US\$21)] and their total charges [PHP 4542 (US\$101)] were also much lower than those of other groups. However, even for this group the median support value for their treatment did not exceed 80%.

Factors associated with NHIP beneficiaries having to make out-of-pocket payments and the size of these payments are presented in Table 3 (which presents results from the two-part model: the probit model and the ordinary least squares model). When adjusted for other variables, sponsored indigent members were more likely to make an out-of-pocket payment than other types of members. The size of these payments among sponsored indigent members did not differ significantly from those of employed members and lifetime members, but was significantly lower than those of individually paying members and overseas Filipino workers. The age of the patient (older) and length of hospitalization (longer) were both significantly associated with making out-of-pocket payments that were higher. The magnitude of out-of-pocket payment was increasing in the years after 2007, while the likelihood of making an out-of-pocket payment also increased in 2008. NHIP beneficiaries in Benguet province (a rural area) were significantly more likely to make an out-of-pocket payment, but the size of this payment was significantly lower than the amount beneficiaries in Baguio city were required to pay.

Among the four case types, patients with moderately severe diseases (case type B) had a greater probability of making an out-of-pocket payment and of that payment being significantly higher than patients suffering from simple diseases (case type A). Patients with case type C (severe) or D (extremely severe) diseases were significantly less likely to make out-of-pocket payments than patients with case type A (simple) diseases. However, while patients with case type C diseases were more likely to make smaller payments than case type A patients, for patients with case type D diseases the reverse was true—they

Table 1 Characteristics of NHIP beneficiaries and hospitals by type of membership

Characteristics	Type of membership									
	Employed		Sponsored indigent		Individually paying/OFW		Lifetime		TOTAL	
	median	(IQR)	median	(IQR)	median	(IQR)	median	(IQR)	median	(IQR)
Age of patient	30	(36)	27	(37)	33	(41)	69	(11)	33	(40)
Length of hospitalization (days)	2	(2)	3	(2)	2	(3)	3	(4)	2	(2)
	<i>n</i>	(%)	<i>n</i>	(%)	<i>n</i>	(%)	<i>n</i>	(%)	<i>n</i>	(%)
Sex of patient										
Male	21 410	(40%)	3 431	(46%)	10 429	(40%)	4 106	(55%)	39 376	(42%)
Female	31 793	(60%)	4 093	(54%)	15 858	(60%)	3 411	(45%)	55 155	(58%)
Residence of patient										
Baguio city	31,753	(60%)	641	(9%)	14 214	(54%)	4 796	(64%)	51 404	(54%)
Benguet province	21 447	(40%)	6 883	(91%)	12 069	(46%)	2 721	(36%)	43 120	(46%)
Baguio city or Benguet province	3	(0%)	0	(0%)	4	(0%)	0	(0%)	7	(0%)
Member or dependent										
Member	20 825	(39%)	2 579	(34%)	10 067	(38%)	5 815	(77%)	39 286	(42%)
Dependent	32 378	(61%)	4 945	(66%)	16 220	(62%)	1 702	(23%)	55 245	(58%)
Case type (severity of disease)										
A (Simple)	38 661	(73%)	5 608	(75%)	15 988	(61%)	3 906	(52%)	64 163	(68%)
B (Moderate)	8 677	(16%)	1 016	(14%)	4 334	(16%)	1 386	(18%)	15 413	(16%)
C (Severe)	5 421	(10%)	844	(11%)	5 697	(22%)	2 035	(27%)	13 997	(15%)
D (Extremely severe)	444	(1%)	56	(1%)	268	(1%)	190	(3%)	958	(1%)
Year of discharge										
2007	16 277	(31%)	2 264	(30%)	7 393	(28%)	2 236	(30%)	28 170	(30%)
2008	17 533	(33%)	2 282	(30%)	8 227	(31%)	2 446	(33%)	30 488	(32%)
2009	19 393	(36%)	2 978	(40%)	10 667	(41%)	2 835	(38%)	35 873	(38%)
Ownership and level of hospital										
Public										
Primary (level I)	899	(2%)	1 270	(17%)	776	(3%)	142	(2%)	3 087	(3%)
Secondary (level II)	1 596	(3%)	1 010	(13%)	749	(3%)	87	(1%)	3 442	(4%)
Tertiary (level III/IV)	17 469	(33%)	3 134	(42%)	9 769	(37%)	2 611	(35%)	32 983	(35%)
Private										
Primary (level I)	1 108	(2%)	7	(0%)	55	(0%)	13	(0%)	1 183	(1%)
Secondary (level II)	6 865	(13%)	1 029	(14%)	2 636	(10%)	548	(7%)	11 078	(12%)
Tertiary (level III/IV)	25 266	(47%)	1 074	(14%)	12 302	(47%)	4 116	(55%)	42 758	(45%)
Location of hospital										
Benguet province and Baguio city	46 563	(88%)	7 207	(96%)	23 824	(91%)	6 779	(90%)	84 373	(89%)
Other provinces in CAR region	895	(2%)	131	(2%)	286	(1%)	56	(1%)	1 368	(1%)
National Capital Region	1 946	(4%)	33	(0%)	982	(4%)	349	(5%)	3 310	(4%)
Other regions in the country	3 799	(7%)	153	(2%)	1 195	(5%)	333	(4%)	5 480	(6%)
TOTAL	53 203	(100%)	7 524	(100%)	26 287	(100%)	7 517	(100%)	94 531	(100%)

Notes: NHIP: National Health Insurance Program; OFW: Overseas Filipino workers; IQR: inter-quartile range.

were more likely to make higher self-financed payments than patients with case type A diseases.

The higher the level of the hospital, the more likely it was that a patient would have to make an out-of-pocket payment and that this payment would be greater. The sole exception to this was secondary public hospitals where patients had a lower

probability of incurring these costs and where the size of the actual payment was lower than that for primary public hospitals.

Due to the special circumstances surrounding pregnancy (e.g. that only one sex is hospitalized, that costs arise due to ‘physiological’ rather than ‘pathological’ processes, etc.)

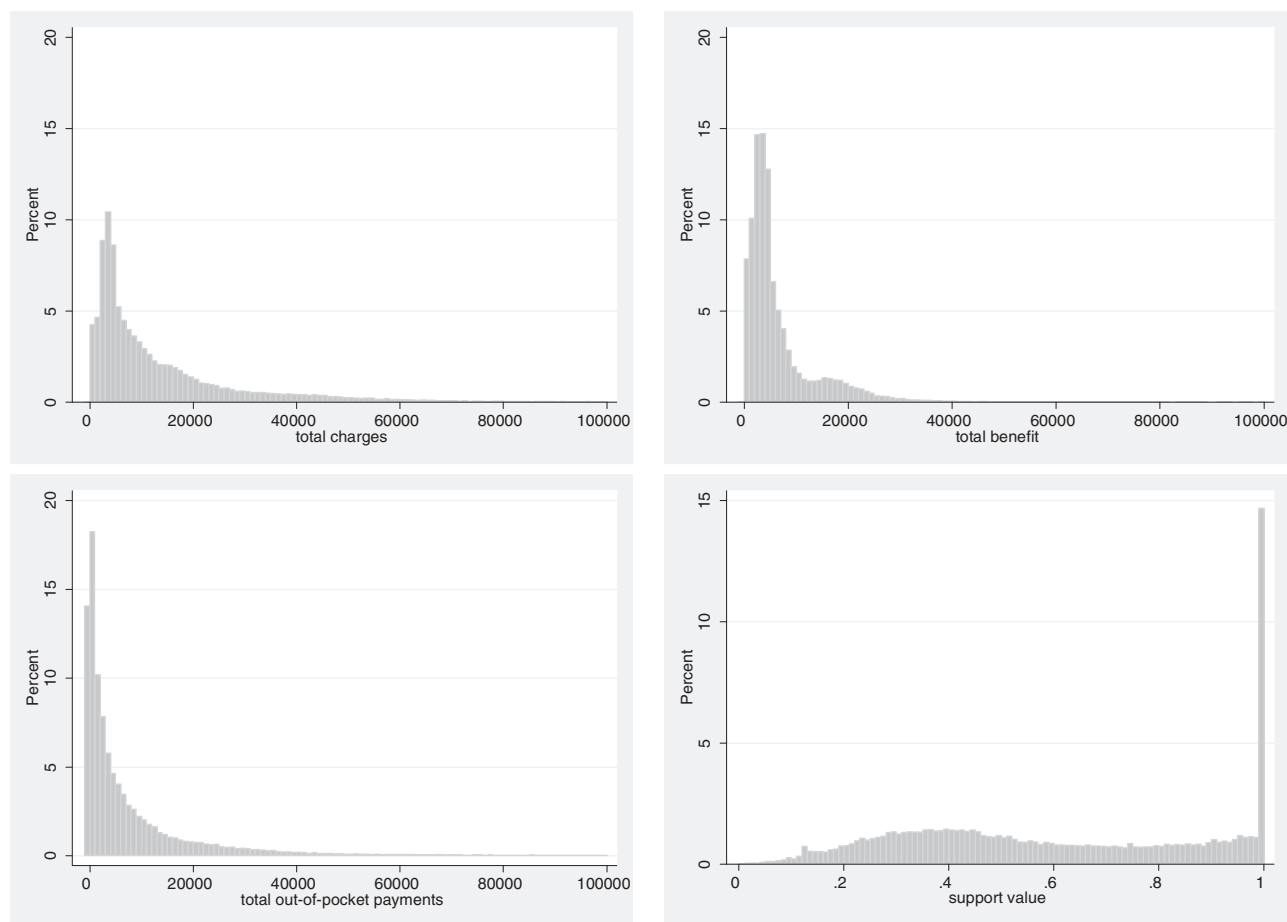


Figure 3 Distribution of total charges, NHIP benefit, out-of-pocket payments and support value

Notes: Each bar in these histograms of total charges, total benefit and total out-of-pocket payments represents 1000 Philippine pesos (US\$22), while each bar in the support value histogram represents 1%. The bar furthest left below 0 pesos in the total out-of-pocket payment histogram and the bar furthest right at 1 in the support value histogram represent the proportion of zero out-of-pocket payments or where there is 100% support value, respectively. Total charges, total benefit and total out-of-pocket payments of more than 100 000 pesos are not presented in these histograms.

we conducted the same analyses for pregnancy-related cases (14 945 cases, representing 16% of all cases) and other non-pregnancy-related cases (79 578 cases) separately. The results of the two-part model showed that basically there was no significant difference between pregnancy-related cases and non-pregnancy-related cases, either in the probit or OLS models, in terms of the direction (positive or negative) of the coefficients when they were significant (i.e. P -value < 0.05) (data not shown).

Discussion

Under the current NHIP benefit scheme in the Philippines, where the insurance program covers all medical costs for inpatient care but only up to specified benefit ceilings, most NHIP beneficiaries enjoyed reduced self-financed treatment costs. The median out-of-pocket payment figure was PHP 3016 (US\$67), while the median level of support value per claim was 57%.

However, this does not mean that the NHIP ensures financial risk protection among claimants under the current benefit

scheme. The size of out-of-pocket payments varied widely [IQR: PHP 9393 (US\$209)], hence beneficiaries are uncertain about how much they will have to pay from their own pockets until they receive the bill. Moreover, some beneficiaries were faced with extremely large costs, i.e. 13% of claims involved out-of-pocket payments of more than PHP 19 213 (US\$428) which was equivalent to 10% of the average annual household income in the CAR region in 2006 (Philippines National Statistics Office 2007). Regarding the impact of having to self-finance such a sum, medical costs of more than 10% of total annual household income are typically considered as one of the common markers of catastrophic medical expenditure (Pradhan and Prescott 2002; Ranson 2002; Wagstaff and van Doorslaer 2003).

With regard to one factor which determines benefit ceilings, the level of the hospital, our analysis showed that the higher the level of the hospital, the more likely it was that patients would have to make an out-of-pocket payment and that this payment would be greater (excepting secondary public hospitals), despite the NHIP's attempts to mitigate this by setting different benefit ceilings based on the level of the hospital. While it seems intuitive that better hospitals have higher

Table 2 Total hospital charges, NHIP benefit, out-of-pocket payment incurred, support value and the share of zero out-of-pocket payments by ownership and level of hospital, case type of disease and type of membership

Characteristics	<i>n</i>	Total charges		NHIP benefit		Out-of-pocket payment		Support value		Zero out-of-pocket payment	
		median	(IQR)	median	(IQR)	median	(IQR)	median	(IQR)	<i>n</i>	(%)
Ownership and level of hospital											
Public											
Primary (level I)	3 087	2 690	(1 833)	2 245	(1 480)	300	(700)	88%	(24%)	623	(20%)
Secondary (level II)	3 442	3 557	(3 003)	3 042	(2 535)	200	(900)	93%	(22%)	954	(28%)
Tertiary (level III/IV)	32 983	5 564	(10 337)	4 324	(5 770)	1 030	(3 389)	84%	(41%)	7 426	(23%)
Private											
Primary (level I)	1 183	2 665	(2 849)	2 027	(1 544)	500	(1 307)	79%	(34%)	146	(12%)
Secondary (level II)	11 078	5 370	(6 906)	3 068	(2 386)	2 120	(5 329)	58%	(45%)	1 007	(9%)
Tertiary (level III/IV)	42 758	14 045	(21 811)	5 076	(6 394)	8 161	(14 419)	40%	(26%)	2 998	(7%)
Case type (severity of disease)											
A (Simple)	64 163	6 873	(9 286)	3 831	(3 143)	2 810	(7 238)	55%	(50%)	6 389	(10%)
B (Moderate)	15 413	29 838	(27 773)	16 560	(9 328)	12 646	(23 428)	52%	(43%)	618	(4%)
C (Severe)	13 997	3 200	(7 995)	2 990	(4 148)	500	(3 800)	87%	(60%)	6 062	(43%)
D (Extremely severe)	958	22 773	(37 277)	13 926	(19 109)	7 069	(23 149)	64%	(53%)	85	(9%)
Type of membership											
Employed	53 203	8 569	(14 791)	4 375	(5 110)	3 450	(9 724)	55%	(52%)	6 749	(13%)
Sponsored indigent	7 524	4 542	(7 249)	3 570	(4 097)	963	(2 762)	80%	(38%)	1 193	(16%)
Individually paying/OFW	26 287	7 434	(14 688)	3 978	(5 152)	2 874	(9 013)	56%	(52%)	4 226	(16%)
Lifetime	7 517	11 994	(22 615)	5 180	(7 193)	5 512	(15 006)	48%	(50%)	986	(13%)
Total	94 531	8 031	(14 872)	4 235	(5 220)	3 016	(9 393)	57%	(53%)	13 154	(14%)

Notes: NHIP: National Health Insurance Program; OFW: Overseas Filipino workers; IQR: inter-quartile range. Unit of total charges, NHIP benefit, out-of-pocket payment: Philippine pesos.

charges and hence that out-of-pocket costs will also be higher, our results may also be indicative of another phenomenon. Higher potential hospital charges should act as an incentive for people with less serious illnesses to use lower-level hospitals where costs are reduced. However, in both high- and low-income countries there is a disproportionate focus on specialist and tertiary care, which is a major source of inefficiency and inequality in health service delivery (World Health Organization 2008).

The Philippines is no exception in this respect (Hindle *et al.* 2001; World Bank 2004). Much of the population (26%) bypass primary and secondary levels of care, while tertiary hospitals continue to admit cases more suited to primary and secondary hospitals (Philippines Department of Health 2010b). Our analysis showed that among all tertiary hospital claims, 62% were for simple diseases which could have been managed at primary or secondary level hospitals (data not shown). This over-reliance on tertiary hospitals, with their higher charges and thus higher associated out-of-pocket costs, suggests that more should be done to incentivize the use of lower-level hospitals for less serious illnesses. This may involve improving the quality of lower level hospitals, as a primary reason for bypassing lower level hospitals is that the quality of services provided there is not always high due to the lack of skilled and motivated staff, equipment, medicines and supplies (Hindle *et al.* 2001; World Bank 2004).

The other determinant of benefit ceilings, disease severity, was also associated with the likelihood of making an out-of-pocket payment as well as with the amount paid. Although PhilHealth sets higher benefit ceilings for more severe diseases, our analysis showed that while patients with case type B (moderate severity) diseases were more likely to make an out-of-pocket payment and that it was higher than patients with case type A (simple) diseases, patients with case type C (severe) and D (extremely severe) diseases had a lower likelihood of making out-of-pocket payments than patients with case type A (simple) diseases, and for type C diseases the amounts they paid were also smaller. Although PhilHealth has worked to update disease classification and benefit ceilings so that the level of insurance coverage is appropriate for the different disease types (Philippine Health Insurance Corporation 2006; Philippine Health Insurance Corporation 2009a; Philippine Health Insurance Corporation 2009d), our results suggest that a gap still exists between actual charges and the benefit ceilings of different disease categories. Further research needs to be conducted to determine which kinds of disease had a larger gap between actual costs incurred and benefit ceilings, especially for case type B (moderate severity) diseases whose charges as well as the out-of-pocket payment they incurred were noticeably higher than for the other disease categories, so that a re-classification of the disease categories as well as an adjustment of benefit ceilings can be undertaken if deemed necessary.

Table 3 Two-part model estimate of out-of-pocket payments

	Making payment (probit) ^a					Size of payment (ordinary least squares) ^b				
	Coef.	Std. Err.	P > z	[95% Conf. Interval]		Coef.	Std. Err.	P > t	[95% Conf. Interval]	
Type of membership [reference group: Sponsored indigent]										
Employed	-0.1858	0.0226	<0.001	-0.2300	-0.1415	-0.0236	0.0179	0.187	-0.0586	0.0114
Individually paying/OFW	-0.0682	0.0235	0.004	-0.1143	-0.0221	0.1066	0.0186	<0.001	0.0702	0.1430
Lifetime	-0.1039	0.0324	0.001	-0.1674	-0.0404	-0.0081	0.0241	0.737	-0.0554	0.0392
Age of patient	0.0046	0.0003	<0.001	0.0040	0.0051	0.0086	0.0002	<0.001	0.0082	0.0090
Sex of patient [reference group: Male]										
Female	-0.0090	0.0120	0.452	-0.0326	0.0145	0.0925	0.0089	<0.001	0.0750	0.1100
Residence of patient [reference group: Baguio city]										
Benguet province	0.0282	0.0128	0.028	0.0031	0.0534	-0.2780	0.0095	<0.001	-0.2967	-0.2593
Member or dependent [reference group: Member]										
Dependent	0.0244	0.0127	0.055	-0.0005	0.0493	-0.1033	0.0094	<0.001	-0.1217	-0.0848
Case type (severity of disease) [reference group: A (Simple)]										
B (Moderate)	0.2487	0.0211	<0.001	0.2073	0.2902	0.8916	0.0118	<0.001	0.8685	0.9147
C (Severe)	-1.2048	0.0168	<0.001	-1.2376	-1.1719	-0.0573	0.0156	<0.001	-0.0880	-0.0267
D (Extremely severe)	-0.4451	0.0615	<0.001	-0.5657	-0.3245	0.3686	0.0428	<0.001	0.2847	0.4525
Length of hospitalization (days)	0.0930	0.0022	<0.001	0.0886	0.0974	0.0948	0.0009	<0.001	0.0929	0.0966
Year of discharge [reference group: Year 2007]										
2008	0.1022	0.0148	<0.001	0.0731	0.1312	0.1236	0.0110	<0.001	0.1021	0.1451
2009	0.0172	0.0140	0.218	-0.0102	0.0447	0.1940	0.0106	<0.001	0.1731	0.2148
Ownership and level of hospital [reference group: Primary public (level I)]										
Secondary public (level II)	-0.2855	0.0380	<0.001	-0.3599	-0.2111	-0.1185	0.0381	0.002	-0.1932	-0.0438
Tertiary public (level III/IV)	0.2758	0.0293	<0.001	0.2183	0.3333	1.0090	0.0270	<0.001	0.9560	1.0620
Primary private (level I)	0.4544	0.0550	<0.001	0.3466	0.5623	0.4065	0.0464	<0.001	0.3155	0.4974
Secondary private (level II)	0.5939	0.0320	<0.001	0.5313	0.6565	1.5250	0.0283	<0.001	1.4695	1.5805
Tertiary private (level III/IV)	1.0967	0.0307	<0.001	1.0366	1.1568	2.6936	0.0271	<0.001	2.6405	2.7467
Location of hospital [reference group: Benguet province and Baguio city]										
Other provinces in CAR region	0.2068	0.0479	<0.001	0.1129	0.3008	0.4565	0.0446	<0.001	0.3690	0.5440
National Capital Region	-0.4140	0.0288	<0.001	-0.4705	-0.3576	0.6836	0.0264	<0.001	0.6318	0.7354
Other regions in the country	-0.0462	0.0248	0.062	-0.0947	0.0024	-0.1556	0.0192	<0.001	-0.1933	-0.1179
Constant	0.4467	0.0368	<0.001	0.3746	0.5187	5.5252	0.0317	<0.001	5.4631	5.5873

Notes: ^a $n = 94\,523$, chi-square: $P < 0.0001$, pseudo R-square: 0.2317

^b $n = 81\,370$, F-test: $P < 0.0001$, adjusted R-square: 0.4819

The probit model assesses the probability that an individual makes an out-of-pocket payment of any amount, while the ordinary least squares model, used for the sub-sample with non-zero out-of-pocket payments, assesses the correlates of making an out-of-pocket payment.

The reason for the existing gap between actual charges and the benefit ceilings is primarily because hospitals and doctors can decide their own fee schedules and PhilHealth has no mechanism to control this (Hindle *et al.* 2001; Obermann *et al.* 2006). Thus, although PhilHealth can change benefit levels to achieve what it considers to be appropriate benefit ceilings, hospitals can simply increase their charges in response (Hindle *et al.* 2001; Gertler and Solon 2002) and the gap in coverage will remain. Our results showed that the size of out-of-pocket payments as well as the probability of making an out-of-pocket payment increased from 2007 to 2009 (though the probability of making an out-of-pocket payment in 2009 was not significantly higher than in 2007). During the three-year study period, PhilHealth increased benefit ceilings only once, in April 2009 (Philippine Health Insurance Corporation 2009a). Although we

cannot say anything definitive as we do not have data on how the fee schedule of each hospital changed during the same period, it can be hypothesized that the increased size of out-of-pocket payments as well as the increased probability of making an out-of-pocket payment was due to the increased charges of the health care providers during this period, an increase which may have occurred more often than changes in the PhilHealth benefit ceilings.

In response, PhilHealth has recently decided to shift the provider payment mechanism away from a fee-for-service system with benefit ceilings, to case-based payment under a case-mix system, where hospitals are paid by health insurance reimbursement and/or patients' out-of-pocket fees according to predetermined fixed rates which are calculated based on the relative complexity and intensity of services required to treat

patients (Jegers *et al.* 2002; Philippines Department of Health 2010c). Indeed, PhilHealth started case-based payment for some specific case types including normal spontaneous delivery and prenatal care in 2009 (Philippine Health Insurance Corporation 2009b), and this was extended to another 21 case types (mostly among the 20 most frequently occurring diseases) in 2011 (Philippine Health Insurance Corporation 2011). As payment rates are predetermined and fixed per case under case-based payment, health care providers have an incentive to increase the efficiency of treatment (i.e. minimizing the cost of treating patients with the same condition) so that earnings from the fixed rate payment can be maximized (Maceira 1998; Waters and Hussey 2004).

The use of this system in other countries has been associated with several positive results including cost-saving and a reduction in the average length of hospital stays (Newhouse and Byrne 1988; Chalkley and Malcomson 2000; Schuetz *et al.* 2011). However, it should be noted that the case-based payment method has some disadvantages. As health care providers would have an incentive to contain treatment costs, they might discharge patients early even though the treatment is not completed, which has been observed in countries where a case-based payment method has been introduced (Rock 1985; Rogers *et al.* 2005). Alternatively, they may re-admit the same patient for the same disease(s), so that they can receive reimbursement twice or more, which leads to a failure to contain the total health care cost funded by health insurance and/or patients (Louis *et al.* 1999; Kjerstad 2003; World Health Organization 2010b). Hence, PhilHealth needs to closely monitor the potentially negative impact of the case-based payment method. PhilHealth also has to maintain case rates so that they appropriately reflect the actual cost of treatment in order that health care providers do not suffer underpayment and/or attempt to cheat benefit claims (Gowrisankaran and Town 2003; Figueras *et al.* 2005).

It is important to note that case-based payment alone is not sufficient to establish a health financing system where large out-of-pocket payments can be prevented (Gottret *et al.* 2008; World Health Organization 2009). As the three main funding sources for health care are social insurance, tax-based government financing and private spending, especially out-of-pocket expenditure (Schieber *et al.* 2006; Hsiao and Shaw 2007; World Health Organization 2010a), more investment for health from social health insurance and/or tax-based government funding is needed in order to reduce the dependency on out-of-pocket payments (Weber and Piechulek 2010; Tangcharoensathien *et al.* 2011). As the Philippines' NHIP is funded primarily by premium contributions from its members with partial subsidies from tax-based government budgets (for the sponsored program) (Philippine Health Insurance Corporation 2010), it is necessary to increase the amount of premium contributions which are collected from each member, as well as government subsidies which are paid for the premiums of the poor.

A recent study by the World Health Organization estimated that universal health coverage, where the financial risk of incurring large out-of-pocket payments can be prevented through pre-payment and risk pooling mechanisms such as the NHIP, is more likely to be attained in countries where the sum of tax-based government funding and social health

insurance is around 5–6% of gross domestic product (GDP) (World Health Organization 2010b; Xu *et al.* 2010). The Philippines is currently a long way short of this figure, as its government (both national and local) and PhilHealth spent only 1.3% of GDP on health in 2009 (Cheng 2010; World Health Organization 2011).

Protection of the poor from financial risk is one of the main components of the new Aquino Health Agenda, mentioned previously (Philippines Department of Health 2010a). The poor are currently included in the NHIP as sponsored indigent members after their selection by local government social welfare departments following a means test. Their premiums are paid by national and local governments or by private donors (Tangcharoensathien *et al.* 2011). In the current study, beneficiaries of the sponsored indigent program incurred the lowest out-of-pocket costs for inpatient medical treatment among all types of program members. However, this does not mean that the current NHIP scheme is successfully providing needed health services for the poor without financial risk. As our analysis showed, one of the primary reasons for their low self-financed health care costs is that they are much more likely to use public (especially primary and secondary level) hospitals, where out-of-pocket charges are lower. This preference of poorer individuals to use (lower level) public hospitals was also observed in the most recent Philippines' Demographic and Health Survey (DHS) in 2008 (Philippines National Statistics Office and ORC Macro 2009). The 2008 DHS also showed that the average cost of inpatient care in public hospitals [PHP 9849 (US\$219)] was almost one-third of that in private hospitals [PHP 24 278 (US\$541)]. While charges are lower, the quality of services provided in public hospitals, especially in primary and secondary public hospitals, is not always high due to a lack of skilled and motivated staff, equipment, medicines and supplies (Hindle *et al.* 2001; World Bank 2004). Affordability is the main reason for going to a public health facility while the high quality of service provision is the main reason for going to a private health facility (Guerrero 2006; Philippines Department of Health 2010b).

Taking these considerations into account, it can be argued that the lower out-of-pocket payments among beneficiaries of the sponsored indigent program has been achieved at the cost of their having a limited choice of treatment facilities, which also tend to be deficient in terms of the quality of health care services provided (Hindle *et al.* 2001; World Bank 2004). The Aquino Health Agenda (Philippines Department of Health 2010a) recognizes that the poorest groups of the population are the main users of government health facilities and it aims to upgrade and expand the capacity of public hospitals. It also plans to introduce a no-balance-billing policy where NHIP members and their dependents who belong to the poorest income quintile will not be required to make any self-payments for the costs of their confinement. Our study highlights the potential importance of this reform, as although indigent members did make the lowest out-of-pocket payments among all income groups, the costs of medical treatment incurred can nevertheless be considerable in comparative terms and act as a mechanism to further exacerbate financial hardship among individuals and their families belonging to this group.

This study had several limitations. First, the PhilHealth claims database has limited information on the status of the beneficiaries. No data were available on annual household income, education level or occupation. Data on annual household income or expenditure are indispensable when quantifying the potential impact of out-of-pocket costs. In this study, we used regional average household income as a reference measure, but this is obviously a weakness as even smaller self-financed medical payments can be considered 'catastrophic' if the annual income of the patient's household is lower than average and vice versa.

Second, the total out-of-pocket payment, calculated as the difference between total medical charges incurred and insurance benefit paid, may not coincide with what the beneficiaries actually paid. The data in the claim records only reflect official medical charges. The cost of drugs bought in external pharmacies and diagnostic tests conducted outside the hospital where the patient was treated can only be included when beneficiaries are aware that these are claimable and actually make claims for them. As a result, claim record charges may underestimate the total cost of treatment and thus, the size of the self-financed payments.

Third, other potentially important information was not available for us to consider. Current NHIP benefit has a limitation in terms of the maximum number of confinement days that can be covered, at 45 days per year for members and an additional 45 days for all dependents. Moreover, reimbursement for drugs and medicines, supplies and laboratory tests for the same illness and condition can only be provided if two hospitalizations are separated from each other by more than 90 days (Philippine Health Insurance Corporation 2009a). Therefore, if beneficiaries had hospitalizations which they were not entitled to make an insurance claim for—i.e. hospitalizations which occurred after they had had the maximum 45 coverage days, or hospitalizations which occurred within 90 days from the previous confinement for the same disease—the results of the study would have underestimated the prevalence of out-of-pocket payments. However, whether they made such claims and were subsequently denied reimbursement was not clear from the claim record database.

In conclusion, though the current NHIP in the Philippines, which offers benefits for inpatient care predominantly on a fee-for-service basis up to a fixed ceiling, reduces the size of out-of-pocket payments, NHIP beneficiaries are not completely free from the financial risk of having to make large out-of-pocket payments, since the amount of the payment varies widely and can be extremely large in some cases. Factors such as the severity of the disease, membership type and the level of the hospital are all associated with the likelihood of having to make an out-of-pocket payment and/or the amount of this payment, despite PhilHealth's attempts to mitigate this by setting different benefit ceilings based on the level of the hospital and the severity of the disease. To reduce these large out-of-pocket payments and to increase financial risk protection further, ensuring more investment for health from social health insurance and/or tax-based government funding, as well as shifting the provider payment mechanism from a fee-for-service to a case-based payment method (which up until now has only been partially implemented), is essential.

Funding

This work was supported by the University of Tokyo [Research Grant for Doctoral Students to MT].

Conflict of interest

None declared.

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