

The Cost of Primary Care: An Experience Analysis in an Urban Setting

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ABSTRACT

Objectives. PhilHealth's present health benefit scheme is largely centered on in-patient services. This inadvertently incentivizes hospital admissions for increased access to benefit coverage. To address this problem, this study proposes a costing method to comprehensively finance outpatient care. The objective of this paper is to estimate an annual primary care benefit package (PCBP) cost based on experience analysis (actual benefit usage) on the first year of implementation at an urban pilot site.

Methods. A cost analysis was conducted to assess a disease-agnostic primary care benefit package for an urban outpatient government facility over the first year of implementation. Costing information was gathered through staff interviews, accounting documents, and usage data from the electronic health records system available on-site.

Results. The annual primary care cost was defined as the estimated financial coverage for eligible employees and their eligible dependents (n=15,051). The annual utilization rate for consultations was reported at 51%. Of patients who consulted, approximately 38% accessed free available diagnostic procedures and 48% availed of free available medicines. Based on these usage rates, the annual primary care cost for the first year was computed at PhP 403.22 per capita.

Conclusion. Our study shows that on the first year of coverage in a government run urban outpatient facility, an allocation of PhP 403.22 per capita can allow coverage for a disease-agnostic package (comprehensive); this amount excludes out-of-pocket expenses incurred by the target population of this study. This amount is feasible only when co-opted with opportunistic registration, reduction of untargeted check-ups, prior contextual community engagement, and streamlining of patient-transactions through an electronic health record (EHR).

Keywords: primary care, experience analysis, primary care cost, health policy, healthcare financing, cost, and cost analysis



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INTRODUCTION

Background of the Study

The National Health Insurance Program (NHIP) under the Philippine Health Insurance Corporation (PhilHealth) is mandated to “provide health insurance coverage and ensure affordable, acceptable, available, and accessible health care services for all citizens of the Philippines”.¹ However, the present structure of the NHIP is largely centered on inpatient services with minimal coverage for outpatient care.² The availability of primary care services in different settings allows people to have options to choose from. However, people may opt to avail primary care services in tertiary facilities due to the increased availability of supplies and services.³ Bypassing primary care centers further aggravates healthcare worker (HCW) shortages and maldistribution^{4,5}, straining HCW capacity in many hospitals.

Gaps in financing outpatient care has led to problems in resource allocation and mobilization. Health expenditures for inpatient and outpatient services increased from PhP 6,345.00 in 2016 to PhP 7,496.00 per capita in 2018.^{6,7} From these estimates^{6,7}, household expenses for outpatient services still average at PhP 3,885.25⁸ per person. In 2018, out-of-pocket (OOP) expenses reached 54%.⁹ Underdeveloped primary care systems aggravate spending, potentially aggravating existing health inequities that affect the country’s marginalized sectors.⁸

Republic Act 11223 or the Universal Health Care (UHC) Law of 2019 aimed to address these gaps through a comprehensive expansion of primary care benefits.¹⁰ Even prior to the passage of the UHC law, PhilHealth and the University of the Philippines commissioned a series of pilot studies through Philippine Primary Care Studies (PPCS) to determine the feasibility and impact of the outpatient benefits expansion across urban, rural, and remote sites. The service model piloted across these sites was developed according to the definition of primary care and its corresponding system functions¹¹ as: 1) the point of first contact with the healthcare system, 2) the provider of comprehensive health services, 3) the coordinator for secondary and tertiary health services, and 4) the principal point for continuing care. To accommodate these functions, PPCS developed a disease-agnostic package which became the basis for cost estimates on financing of primary care.

This paper outlines the methods employed and experience gained in costing a comprehensive primary care benefit package (PCBP) for the PPCS urban pilot site. The costing model presented in this paper adapts the perspective of University of the Philippines Health Service (UPHS) – the urban pilot site. PCBP serves as a resource of outpatient health benefits. Such a package aims to provide Filipinos with access to primary care benefits across various hospital clinics, RHUs, and BHCs across the Philippines.¹²

OBJECTIVES

The objective of this paper is to estimate an annual PCBP cost based on experience analysis (actual benefit usage) on the first year of implementation at an urban pilot site.

METHODS

Site Description and Sample

UPHS was selected as the urban pilot site given the expansive network of HCWs and services housed in the facility. Expenses were shouldered by the University of the Philippines Diliman administration prior to the study’s implementation. During the study, funding by PHIC was based on a capitation scheme. Funding was patterned to the number of eligible beneficiaries. This study implemented a disease agnostic package to ensure that all patient concerns or ailments are accounted for. Such allowed the study group to comprehensively predict the cost of primary care. Subsidized diagnostic tests and prescription medicines were capped to a certain amount per year during implementation but full costs were included in the analysis.

UPHS focuses on the delivery of primary care services to its target beneficiaries and very minimal public health services. UPHS employed 11 permanent primary care physicians at the time of the study and was supported by a cadre of nurses, nursing attendants, and administrative staff. The 50-bed government facility also featured a medical laboratory, radiology department, pharmacy, and a separate public health unit. UPHS caters to a university-based community. Even before the PPCS intervention, UPHS consultation services were free for UP-mandated clientele (i.e., faculty, employees, UP contractuales, and non-UP contractuales). Medical procedures were likewise paid at subsidized prices but full cost was included in our analysis.

During the study period, the PCBP expanded coverage to include diagnostic procedures and medicines for UP-mandated clientele and their dependents. The target beneficiaries totaled 15,051 individuals. 42% of these respondents were male while 58% were female. 27.5% were below 20 years of age, 19% were 20-29 years old, 19% were 30-39 years old, 17% were 40-49 years old, 10% were 50-59 years old, and 7% of respondents were above 60 years of age. The most frequent ailments encountered during consultation for the given demographic are listed in Table 1.

Since we did not have actual dependent counts, the study team provided estimates. Eligible beneficiaries encompassed the 5,017 PhilHealth member employees of the university and their estimated 10,034 dependents. The primary care experience of this cohort was analyzed as the foundation of the proposed costing method reported in this paper.

Benefit Package

A disease-agnostic package was developed for financing primary care. Aggregated outpatient expenses were entirely

Table 1. Most Common Acute and Chronic Ailments Encountered during Consultation

Adults		Children	
Acute	Chronic	Acute	Chronic
<ul style="list-style-type: none"> • URTI • Acute Rhinitis • UTI • Muscle strain • Wounds/ injuries 	<ul style="list-style-type: none"> • Hypertension • Dyslipidemia • Diabetes • Hyperuricemia • Obesity • EOR • Osteoarthritis 	<ul style="list-style-type: none"> • URTI • Acute Rhinitis • Acute Pharyngitis • Acute Bronchitis • UTI 	<ul style="list-style-type: none"> • Asthma

URTI – Upper Respiratory Tract Infection; UTI – urinary tract infection; EOR – Error of Refraction

covered up to an annual cap of PhP 2,000 per patient. This covered for consultations with partner providers, recommended diagnostic procedures, and prescribed medicines, regardless of the underlying disease. Unless unavailable or otherwise specified, patients were often assigned a single primary care physician to promote the continuity of care. Consultations necessitating specialist care were excluded in the pilot year of study. The cost of infrastructure was also omitted. There is an assumption that there are pre-existing facilities when primary care services are implemented. This was added to the manuscript (The benefit package).

Strategies in Optimizing the Proposed Costing Method for Implementation

Optimizing the implementation of a disease-agnostic PCBP was essential to our costing methodology. This ensured that the provided capitation was efficiently maximized among beneficiaries. Strategies for this included: 1) adopting opportunistic registration; 2) reducing untargeted check-ups 3) engaging communities about risk-sharing; and 4) monitoring disbursements through a centralized EHR. Future adoption of the costing method must consider these strategies to ensure that spending is rational, and monitoring is efficient. The succeeding paragraphs outline the rationale and application of each of these strategies.

Adopting Opportunistic Registration

In the Philippines, service utilization and financial risk protection for the most vulnerable remain low^{13,14} despite widescale efforts directed towards enrollment^{3,15}. The present study promoted *opportunistic registration* or registering patients upon initial consultation as the primary means for benefit enrollment. For the PPCS study sites, an estimated 36% of the rural and 18% of the remote site residents were registered after the first year of implementation. All eligible clientele were registered in the urban site. This registration scheme provided no additional cost or burdens to the PCPs.

Reducing Untargeted Check-Ups

Existing literature^{16,17} identifies untargeted check-ups as a significant driver for health spending that is inefficient,

and often unnecessary. A study conducted by Spyrtos et al. revealed that overdiagnosis may result in health care spending wastage by up to 55.4%¹⁸. To address this, PPCS has proposed a primary care model that patterns the cost of care to the individual needs of a patient. Rather than promoting mass consultations, check-ups can be performed opportunistically when patients consult for a health problem. In addition, the check-up details can be tailored according to patient characteristics such as age, sex, occupation, height, weight, tobacco exposure and others as recommended in Philippine Guideline for Periodic Health Examinations developed by the Department of Health.¹⁹ Registration can be done simultaneously; thus three things can be achieved with one visit – a patient identified health problem is addressed, a check-up is completed, and the patient is registered.

Engaging Communities

An issue raised within discourses on designing a PCBP is the potential misuse of benefits. Hence, prior contextual community engagement was crucial in addressing gaps in the dissemination of information on benefit packages and in mitigating the risk of overspending and overuse.²⁰ This entailed the creation of informational brochures, posters and videos, and the hosting of town hall meetings to explain the concept of risk-sharing. Community members were familiarized with the concept of social health insurance. One does not need to spend their expense caps every year, since unspent funds can be used to help those in need. These may be themselves in the following years.

Integrating Benefit Disbursement and Monitoring through the EHR

An EHR system was central to efficient disbursements and timely monitoring of utilization during the implementation year. Patient-centric and holistic interventions may be difficult to implement in the absence of a tracking system that monitors real-time patient demographics and utilization patterns.^{21,22} Integrating PCB disbursement into an EHR system enabled HCWs to track and manage funds available for each patient. This resulted in effective expense tracking, transparent accounting, and efficient administrative processes in rendering payments. With expenditure data easily generated through the EHR, the present study has emphasized that a strong health information system is crucial in monitoring actual health costs.

Data Gathering

Data were obtained from utilization reports and archival records during the pilot implementation year at UPHS from October 1, 2016, to September 30, 2017. An electronic health record (EHR) system developed for the study was used to generate data applicable for implementing the costing method. The EHR was mainly used on-site to centralize patient data, incorporate ICD classification codes into diagnoses, and automate prescriptions. However, auxiliary functions

of the EHR also enabled report-generation, quality of care monitoring, and facilitated the disbursement of the PCBP. For this reason, expenditure for consultations, diagnostic procedures, and medicines was obtained through the built-in features of the EHR.

Archival data required for the proposed costing method were gathered through accounting documents, pertinent records (e.g., electric monthly bills, morbidity reports), and interviews with the UPHS director and medical personnel. As this costing study was conducted in a pre-existing healthcare facility, expenses for the UPHS building and its implicit infrastructure maintenance costs¹ were excluded from the scope of this research. Gathering UPHS data for primary care costing was duly approved by the University of the Philippines Manila Research Ethics Board (UPMREB).

Costing Methods

This study centers on the development of a comprehensive disease-agnostic PCBP. An activity-based costing method was deemed appropriate for this study as it informs the health budgeting process and may result in more realistic cost estimates.²³ Similar to Zeng et al.²⁴, we implemented a bottom-up approach and collected cost information for all input items required for health service delivery.

The first step was to identify the costs objects and cost drivers for each. The cost objects that need to be costed for this study are the following: consults, medical procedures, and medicines. The assumed cost drivers for each cost object are number of consults, number of medical procedures, and amount of medicine issued, respectively. The next step is then to gather relevant cost information for each cost object. The succeeding subsections and Appendix A discuss this in detail.

The cost contributors for medical consults and procedures were categorized into direct and indirect costs. Traditional accounting defines direct costs are costs that can be directly traced to a specific activity while indirect costs are costs that cannot be easily traced and, hence, should be allocated to the relevant activities using an estimation (e.g., straight-line averaging). Following Jeet et al.²³, in our context, direct costs are attributed directly to the delivery of a particular health service (e.g., consults, medical tests.) while indirect costs are necessarily incurred to deliver service but not for the direct provision of care (e.g., utilities, admin staff salaries). Recurring costs such as supplies used for medical procedures, salaries of personnel, and utilities were factored into this study's estimates. Moreover, the costs of pre-existing equipment used to operate the EHR, newly acquired computers, and printers were likewise considered. (Appendices B and C).

¹ Infrastructure maintenance costs are excluded for the purpose of this analysis because these are not regularly spent and often discretionary expenses subject to budget constraints. While infrastructure costs form part of the true cost of health delivery, excluding them in the analysis removes idiosyncratic effect of the state of UPHS building.

Costs at UPHS may be variable or fixed relative to the cost driver. For example, relative to the number of consults (cost driver), doctors' salaries are fixed. Another example, relative to the number of a specific medical procedure, direct material costs (e.g., cost of reagent) are treated as variable while all other costs are fixed. Usually in practice, fixed costs are allocated to each cost object by assuming a normal level of capacity usage. In this study, the actual annual usage (e.g., actual number of consults, actual number of medical tests) was used as an allocation base to compute the per unit cost of each cost driver.

To calculate the total primary care cost, the utilization rate was defined as the proportion of the eligible population who availed of the service (e.g., consult). The equation, $u_i = n_i/E$, provides the utilization rate of benefits. n_i is the number of those who availed benefit i within the year, and E is the size of the eligible population.

Costing consultations

Salaries of the physicians and the medical staff involved in the administration of consultation services (e.g., triage and records) comprised the largest contributor to consultation costs. Their salaries were totaled along with: 1) the appropriate allocation of utility payment, security fees, and janitorial fees, 2) the cost of office supplies, 3) the cost of procuring and maintaining equipment, and 4) the cost of EHR development, maintenance, and use. Appendix A provides additional details.

The formula provides the cost of a consult where A_k is the annual cost of the cost contributor k and n_c is the total consults for the year.

$$P_C = \frac{\sum_k A_k}{n_c} = \sum_k \frac{A_k}{n_c}$$

Costing medical procedures

Costs for each type of medical procedure was calculated. Direct costs for medical procedures were the aggregated expenses for materials directly attributed to a specific medical procedure (e.g., needle and cuvette for a glucose test). Indirect costs are broken into several components: 1) materials that are not specific to a site and/or procedure (e.g., cotton balls and cleaner), 2) staff payroll, 3) office supplies, 4) utilities, and 5) laboratory and radiology equipment costs. The acquired value of equipment divided by its life years provides the annual cost contribution of facility equipment. Since costs are based on the acquired value of each material, costs incurred from unused and unusable equipment were included. Appendix A provides additional details.

Costing medicines

The cost of medicine is the purchase price of UPHS from their suppliers.

Constructing the primary care costing method

The primary care cost is the sum of the annual consult cost, the annual diagnostic procedures cost (i.e., laboratory and radiological services), and the annual medicine cost. The rates reported in this study can ultimately serve as a benchmark for computing the per capita cost of primary care cost used in similar settings. Table 2 provides a summarized list of values used for the formulas.

The costing method which assumes one-year observation is constructed as follows:

Let M = Total number of eligible PhilHealth members in UP Diliman

Let d = Average number of dependents per eligible PhilHealth member

Let $E = (1 + d)M$ = size of eligible population

n_c = Number of consults in a year

$u_c = n_c/E$ = Utilization rate for consults

E_c = Number of distinct eligibles who consulted

n_c/E_c = Average number of consults availed by eligibles in a year

n_i = Number of eligibles who availed diagnostic procedures

$u_i = n_i/E$ = Utilization rate for diagnostic procedures

n_m = Number of eligibles who availed medicine

$u_m = n_m/E$ = Utilization rate of medicine benefit

Table 2. Summarized table of values

Notation	Definition
M	Total number of eligible PhilHealth members in UP Diliman
d	Average number of dependents per eligible PhilHealth member
$E = (1 + d)M$	Size of eligible population
n_c	Number of consults in a year
$u_c = n_c/E$	Utilization rate for consults
E_c	Number of distinct eligibles who consulted
n_c/E_c	Average number of consults availed by eligibles in a year
n_i	Number of eligibles who availed diagnostic procedures
$u_i = n_i/E$	Utilization rate for diagnostic procedures
n_m	Number of eligibles who availed medicine
$u_m = n_m/E$	Utilization rate of medicine benefit
E_c	Average cost per consult
P_i	Average cost of diagnostic procedures availed per individual
P_m	Average cost of medicines availed per individual
$n_c P_c$	Annual total value of consults availed by eligibles
$n_i P_i$	Annual total value of benefits availed by the population for diagnostic procedures
$n_m P_m$	Annual total value of benefits availed by the population for medicines
$B = n_c P_c + n_i P_i + n_m P_m$	Annual total value of benefits availed by the eligible population

Note that, $n_i \leq n_c$ and $n_m \leq n_c$

Note that, $n_c P_c$ = Annual total cost of consults availed by eligibles

$n_i P_i$ = Annual total cost of benefits availed by the population for diagnostic procedures

$n_m P_m$ = Annual total cost of benefits availed by the population for medicines

The formula below gives the annual total cost of benefits, B , availed by the eligible population:

$$B = n_c P_c + n_i P_i + n_m P_m = (u_c P_c + u_i P_i + u_m P_m)E = (u_c P_c + u_i P_i + u_m P_m)(1 + d)M$$

Note that,

$$B/M = (u_c P_c + u_i P_i + u_m P_m)(1 + d) = \text{Annual primary care cost for each PhilHealth member and their two dependents}$$

$$B/(1 + d)M = (u_c P_c + u_i P_i + u_m P_m)$$

Also,

$$n_c/E = u_c P_c = \text{Annual consult cost per capita}$$

$$n_i P_i/E = u_i P_i = \text{Annual diagnostic procedures cost per capita}$$

$$n_m P_m/E = u_m P_m = \text{Annual medicine cost per capita}$$

RESULTS

The costing method outlined in this study (*Strategies in Optimizing the Proposed Costing Method for Implementation*) was applied to the **first-year implementation** of the expanded PCBP at the urban site. The following paragraphs detail actual observed costs for consultations, diagnostic procedures, and medicines during the study period. From the utilization of these services and their corresponding aggregated costs, an annual primary cost was derived (*Annual Primary Care Outpatient Healthcare Cost*).

Cost of Consultations

Cost per consult per cost contributor was computed by dividing the annual cost of each cost contributor by the total consults for the year. During the study period from October 1, 2016, to September 30, 2017, UPHS had 21,787 consults. This figure included those outside the pre-defined eligible group of the study as the cost of contributors covers all healthcare service recipients at UPHS. The cumulative cost per consult is **PhP 532.79**. Table 3 gives a summary of the cost per consult for each cost contributor.

Table 4 gives a quantitative summary of the consult experience. The pilot implementation of the PCBP at UPHS elicited a total of 7,664 eligible consults. These consults were availed by 3,207 distinct individuals, thereby averaging 2.39 consults per person and a total consult cost of **PhP 4,083,302.56**. Within the sample, consult utilization or u_c was computed at **51%**. The experienced annual consult cost per capita premium was therefore **PhP 271.30**. Our data reveal that the annual cost covers all projected expenses consults, diagnostic procedures, and medicines availed.

Cost of Diagnostic Procedures

Table 5 shows the subsidized prices and computed costs of diagnostic procedures available at the UPHS. The computed costs include direct material and overhead costs which include indirect labor, indirect material, and other indirect costs.² Appendix A provides more details on how the indirect fixed costs were allocated. In our analysis, the computed cost was used rather than the subsidized prices.

UPHS can perform over 80 diagnostic procedures. The total cost incurred for the one-year utilization of all diagnostic procedures amounted to **PhP 1,174,386.92**. This indicates that availing members from the eligible population spent an average of **PhP 955.56** (1,174,386.92/1,229). The three most performed tests were complete blood count (CBC), fasting blood sugar (FBS), and urinalysis. During the study period, 4,805 tests were performed for 1,229 individuals, approximately 38% of those who consulted. Table 6 shows the frequency distribution of tests performed across key laboratory procedures.

Table 7 summarizes the diagnostic procedures benefit experience. The computed utilization of the benefit is 8.2% and the per capita allotment for covering diagnostic procedures was computed at **PhP 78.03** (1,174,386.92/15,051).

Table 3. Cost per Consult for each Cost Contributor

Cost contributor	Cost (PhP)
Human Resources for Health	
Doctor's salary	289.86
Triage nurse's salary	22.08
Records/Billing salary	41.48
Performance-based incentive	50.00
Human resource cost per consultation	403.42
Overhead cost per consultation	
Office supplies	1.38
Security	3.23
Janitorial	0.83
Telephone	1.38
Electricity	6.29
Triage	2.61
Water	3.37
Overhead cost per consultation	19.09
Equipment	
Total annual equipment cost	1,006,260.47
Annual number of consults	21,787
Equipment cost per consult	46.19
Electronic Health Records	
Total annual EHR cost	1,396,279.67
Annual number of consults	21,787
EHR cost per consult	64.09
Computational Summary	
Human resource	403.42
Overhead cost	19.09
Equipment cost	46.19
EHR cost	64.09
Total cost per consult	532.79

Table 4. Summary of Consult Cost for Eligibles

Item	Frequency / Cost
Total eligible PhilHealth members in UP Diliman, M	5,017
Total size of the eligible population, $E = (1 + d) * M$	15,051
Cost of a consult, P_c	PhP 532.79
Total consults, n_c	7,664
Total eligible who consulted, E_c	3,207
Average number of consults per individual who consulted, n_c/E_c	2.39
Total cost of consults, $n_c \cdot P_c$	PhP 4,083,302.56
Average value of a consult per individual who consulted, $(n_c \cdot P_c)/E_c$	PhP 1273.25
Utilization of consult, $u_c = n_c/E$	0.51
Annual consult premium per capita, $(n_c \cdot P_c)/E$	PhP 271.30

² Other indirect costs include janitorial, office supplies, staff salaries, and utilities.

Medicine

Table 8 provides a summary on the utilization of prescribed medicines. Approximately 1,535 or 48% of the 3,207 patients who consulted at UPHS received free prescribed medicines from the UPHS pharmacy. The study only covered medicines that were available at the facility pharmacy to align with the structure of the primary care model. The total cost of availed medicines amounted to **PhP 811,214.50** or an average of **PhP 528.48** (811,214.50/1,535) per patient. Utilization for the medicine benefit was 10.2%. Medicine cost was computed at **PhP 53.90** per capita.

The maximum amount for the combined consultation, diagnostic procedures, and medicine benefits was arbitrarily set at PhP 2,000. Of the patients who consulted at the facility, only 55 or 0.36% of the eligible beneficiaries exceeded the maximum amount covered by the PCBP. The excess amount spent by the 55 beneficiaries' OOP was not included when the cost was computed. The study focused on accounting for patient expenses within capitation. Of the 3,207 eligibles who consulted; 1,229 (~38%) availed the free diagnostic procedures, and 1,535 (~48%) availed of the free medicine. A standard consultation requiring some diagnostic tests revealed an average benefit amount of PhP 2,109.32.

Table 5. Subsidized Prices and Computed Costs of Diagnostic Procedures in the UPHS

Medical test	Subsidized price (PhP)	Computed cost (PhP)
AFB 3 specimen	144.00	219.13
Blood urea nitrogen	87.15	173.20
Cholesterol	87.00	174.38
Complete blood count	108.61	190.34
Creatinine	87.06	175.95
CT/BT test	42.00	134.71
EKG	55.34	76.76
ESR	63.00	154.22
Fasting blood sugar	84.22	172.74
Fecalysis	38.57	133.03
Glucose	105.00	172.74
Gram stain	60.00	157.66
HbA1c	250.40	259.38
KOH smear	68.29	132.61
X-Ray ankle joint	325.06	483.40
Ultrasound (Kidney)	289.55	848.55

Table 6. Frequency Distribution of Diagnostic Procedures Performed across Key Laboratory Procedures Available at UPHS

Laboratory procedure	Number performed
CBC	236
FBS	236
Urinalysis	235
Lipid profile	198
Uric acid	181
Creatinine	178
SGOT (ALT)	153

If medicines were prescribed and availed at the UPHS pharmacy during this consult, the average benefit amount increases to PhP 2,637.80 (Table 9).

Annual Primary Care Outpatient Healthcare Cost

The annual primary care outpatient healthcare cost is defined to be the amount PhilHealth must allot to provide each Filipino basic primary care benefits. It is pooled to cover the group and their dependents' primary care benefit coverage. Using the constructed method (*Strategies in Optimizing the Proposed Costing Method for Implementation*) and the quantitative experience data of UPHS (Table 10),

Table 7. Summary of the UPHS Diagnostic Procedures Benefit Experience

Item	Frequency / Cost
Total eligible who availed, n_1	1,229
Total tests performed	4,805
Total costs incurred	PhP 1,174,386.92
Average diagnostic procedures cost per eligible who availed, P_1	PhP 955.56
Utilization rate, n_1/E	0.082
Annual diagnostics procedures cost per capita, $(n_1 \cdot P_1)/E$	PhP 78.03

Table 8. Medicine Premium

Item	Frequency / Cost
Total eligible who availed, n_m	1,535
Total cost	PhP 811,214.50
Average availed medicine cost, P_m	PhP 528.48
Utilization, n_m/E	0.102
Annual consult premium per capita, $(n_m \cdot P_m)/E$	PhP 53.90

Table 9. Summary of UPHS Primary Care Experience across Consultations, Diagnostics, and Medicines

Medical test	Number of eligible individuals who availed	Average amount of benefit (PhP)
Consults	3,207	1,153.76
Diagnostic Procedures	1,229	955.56
Medicines	1,535	528.48

Table 10. Annual Primary Care Benefit Outpatient Healthcare Cost^A

Item	Cost (PhP)
Total cost of consults	4,083,302.56
Total costs of diagnostic procedures	1,174,386.92
Total cost of medicines	811,214.50
Total cost incurred, B	6,068,903.98
Annual primary care outpatient healthcare cost per capita	403.22

the total cost of the utilized primary care benefit for the first year is **$B = \text{PhP } 6,068,903.98$** . The computed annual primary care benefit outpatient healthcare cost for the first year was therefore **$P = \text{PhP } 403.22$** per capita. In a sensitivity analysis with utilization as low as 40% and as high as 60%, per capita costs were PhP 345.37 and PhP 451.93, respectively.

DISCUSSION

The objective of the present study was to estimate an annual PCBP cost based on experience analysis (actual benefit usage) on the first year of implementation at an urban pilot site. While the sample was limited relative to the target population for nationwide coverage, it accounted for the explicit and implicit costs of comprehensive primary care – a crucial step in assessing the feasibility of universal health coverage.^{3,20} Implementing a disease-agnostic package is crucial in estimating the true cost of primary care. This allows the inclusion of the total expanse of primary care services regardless of the underlying disease.

Based on the UPHS experience, an allocation of PhP 403.22 per capita only permits for the minimum coverage of a disease-agnostic package. This was inclusive of consultations, diagnostic procedures, and medicines up to a spending capitation of PhP 2,000. Computed utilization rates for primary care services availed in the first year of the study thus provided a benchmark figure from which a national primary care benefit package can be modeled. Utilization was tempered by extensive community preparation strategies on the first year. Policymakers are encouraged to create safeguards that can strike a balance between the equitable provision of benefits and sustainable utilization. This is in pre-emption of increased utilization in the subsequent years.

This study revealed that OOP expenses continue to burden beneficiaries. As the study reports, 55 or 0.36% of those eligible still spent expenses OOP. Remaining aligned to the UHC's vision means that policymakers need to minimize OOP expenses incurred by all patients. Benefit packages must, therefore, account for the average OOP expenses incurred from primary care services to determine the adequate coverage per person. In addition, a per capita focus on healthcare budget allocation should be reconsidered. Existing literature shows that family size is directly proportional to healthcare expenses since more individuals may require medical care. Thus, a per family allocation that disregards family size is likely to be inequitable. It potentially excludes larger households from receiving sufficient financial protection.

Reducing OOP expenses should not be solely addressed by increasing total PhilHealth premiums. Such an approach will fail to account for the healthcare needs of individuals with conditions that benefit more from visits to primary care providers rather than hospital admissions. The proposed costing method serves as a guide to achieving person-centered approach towards primary care and its components. Its application during the implementation period shows

that a disease-agnostic package is not only feasible but relatively inexpensive for scale-out, provided there is adequate community preparation to explain the mechanics of health insurance. This can be a valuable tool in circumventing the traditional limitations of disease-based packages.^{25,26}

Aside from allowing estimation of comprehensive costs for primary care, the disease-agnostic approach presents a multitude of other opportunities. To identify ways for optimizing the proposed costing method for implementation, some strategies include: 1) increased utilization by communities up to the level of the barangays; 2) updated tracking of these communities' health profile; 3) quality health outcomes for all family members; and 4) the creation of holistic patient-centered treatment protocols.²⁷ Investing in a comprehensive PCBP holds further potential in reducing ambulatory care-sensitive conditions (ACSCs) and lowering in-patient claims. A study conducted by the Organization for Economic Development and Cooperation reveals that hospitalization for several ACSCs can occupy over 37 million bed days annually.²⁸ Hence, while a variety of factors contribute to the decision for and duration of hospital confinement, there is evidence to suggest that strengthened primary care systems lower health expenditure and alleviate hospital congestion²⁹ by reducing avoidable admissions.

In recent decades, local policy interventions to improve outpatient care were indeed introduced in the form of the National Health Insurance Act, TseKaP outpatient package, and Expanded PCB Package.^{30,31} This culminated in the passage of the UHC Law in 2019, wherein enhanced financial risk protection and quality of care across in-patient and outpatient facilities were outlined as two of its three strategic thrusts.³² Adequate funding is central to the fulfillment of these objectives. Despite the passage of the UHC Law, the national health budget only saw a marginal budget increase of 2.9%³³ from 2019 to 2020. By 2021, 210.2 billion pesos³⁴ or approximately 4.7% of the Philippines' national budget was allocated to the Department of Health (DOH). Only 38.96 of this was allocated to expand primary care coverage through the UHC law.³⁵ A limited budget has historically endangered the accessibility of outpatient services--contributing to fragmented care delivery², elevated OOP spending³⁶, and poor outcomes³⁷. Thus, the pre-existing budget is of great concern.

The struggle to adequately resolve gaps in financing health care has been a recurring trend for over 9 years.^{38,39} As this contributes to an ill-equipped transition of numerous localities towards universal health coverage⁴⁰, the proposed budget is argued to be inadequate in comprehensively addressing the needs of an overburdened health system. The present study responds to these challenges by proposing a disease-agnostic benefit package to estimate the cost of primary care.

Limitations

More research is undoubtedly needed to comprehensively gauge the cost of primary care. The computed cost for primary care benefits may be underestimated in this

study. Researchers only accounted for tests available in the UP system where the study was conducted. This did not include equipment for advanced diagnostic imaging such as CT scans or MRIs. Second, researchers excluded OOP expenses in the calculations. This may include the purchase of prescription medicines from pharmacies outside UPHS. These findings shall be reported in a separate paper. Third, the costing was based on operations conducted from 2017-2018. Adjustments for inflation need to be made. Fourth, the system was only tested during the first year of implementation, where utilization was around 51%. This can be expected to be higher in rural areas, where people have less alternatives for seeking primary care. In addition, these costs will likely increase in subsequent years as primary care becomes a person's first point of entry into the healthcare system. More data are undoubtedly needed to strengthen the advocacy of expanding the proposed costing method for patients across diverse and possibly more disadvantaged settings. Despite these limitations, the computed annual cost provides evidence that comprehensive coverage for medical conditions in this study setting was financially feasible and effective in expanding health access.

CONCLUSION AND RECOMMENDATIONS

The pilot results of this study reveal the feasibility of universal health coverage through a cost analysis of a PCBP at an urban government facility. We estimate that an annual cost of **PhP 377.77 per capita** only permits the minimum financial coverage of a disease-agnostic PCB package on the first year, inclusive of needed consultations, diagnostic procedures, and the prescribed medicine. This annual cost was derived from actual data on patient utilization at the urban pilot site throughout a one-year implementation period. Higher utilization, and therefore higher costs, should be expected in rural and remote areas. Coverage must be re-oriented towards outpatient services to minimize OOP expenses and strategically address prevailing health concerns through primary care. Apart from proposing an annual cost, direct and indirect costs must be considered to support an expanded PCB package on a broader scale. Factors examined include equipment costs, remuneration for human resources, and system costs among several other factors.

Since its urban implementation, PPCS has expanded its proposed costing method to assess its applicability in rural and remote settings in the Philippines. Further explorations on its feasibility across settings and larger sample sizes may prove beneficial in enhancing the accuracy of the estimated cost. However, the findings of the present study suggest that universal health coverage through benefit expansion is financially feasible, provided that a truly comprehensive disease-agnostic model is adapted, existing and additional infrastructure is made available, care is coordinated through an integrated service delivery network, and communities are aptly engaged.

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Disclaimers

Views expressed by the authors in the submitted article are their own and not an official position of the institution or funder.

Statement of Authorship

All authors certified fulfillment of ICMJE authorship criteria.

Author Disclosure

All authors have no conflicts of interest to declare.

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REFERENCES

1. Philippine Health Insurance Corporation, Agency's mandate and functions [Internet]. 2014 [cited 2019 Nov]. Available from: http://www.philhealth.gov.ph/about_us/madate.Php.
2. Dayrit MM, Lagrada LP, Picazo OF, Pons MC, Villaverde MC. The Philippines Health System Review. World Health Organization. Regional Office for South-East Asia. Manila, Philippines; 2018.
3. Bredenkamp C, Capuno J, Kraft A, Poco L, Quimbo S, Tan CA. Awareness of health insurance benefits in the Philippines: what do people know and how? [Internet]. 2017 [cited 2021 Jul]. Available from: <https://openknowledge.worldbank.org/handle/10986/27668?local-attribute=es>.
4. Aiken LH, Buchan J, Sochalski J, Nichols B, Powell M. Trends in international nurse migration: The world's wealthy countries must be aware of how the "pull" of nurses from developing countries affects global health. *Health Aff.* 2004;23(3):69-77. doi:10.1377/hlthaff.23.3.69.
5. German JD, Mina JKP, Alfonso CMN, Yang KH. A study on shortage of hospital beds in the Philippines using system dynamics. 2018 5th Int Conf Ind Eng Appl ICIEA. 2018. doi:10.1109/IEA.2018.8387073
6. Philippine Statistics Authority, Total health expenditures grew by 10.5 percent in 2016 [Internet]. 2017 [cited 2021 Jul]. Available from: <https://psa.gov.ph/content/total-health-expenditures-grew-105-percent-2016>.
7. Philippine Statistics Authority, Total health expenditures grew by 8.3 percent in 2018 [Internet]. 2019 [cited 2021 Jul]. Available from: <https://psa.gov.ph/content/total-health-expenditures-grew-83-percent-2018>.
8. Marfori JRA, Dans AML, Bastillo MOC, Paterno RPP, Rey MP, Catabui JT, et al. Equity in health benefit utilization and financial risk protection in outpatient and inpatient care: Baseline survey of two socioeconomic groups of a pilot primary care benefits scheme in the catchment areas of a university-based health facility. *Acta Med Philipp.* 2019;53(1):31-8. doi:10.47895/amp.v53i1.1621.

9. World Health Organization, Out-of-pocket expenditure (% of current health expenditure) – Philippines [Internet]. 2021 [cited 2021 Jul]. Available from: <https://data.worldbank.org/indicator/SH.XPD.OOPC.CH.ZS?locations=PH>.
10. Philippine Health Insurance Corporation, Implementing guidelines for the primary care benefit (PCB2) package [Internet]. 2014 [cited 2020 Jan]. Available from: https://www.philhealth.gov.ph/circulars/2014/circ17_2014.pdf.
11. Galingana CLT, De Mesa RYH, Marfori JRA, Paterno RPP, Rey MP, Co EEA, et al. Setting core competencies of health workers towards quality primary care: Proceedings of a National Consultative Workshop. *Acta Med Philipp*. 2020; 54. doi.org/10.47895/amp.v54i0.2068
12. Orange Health Consultants, Health care in The Philippines [Internet]. 2021 [cited 2021 Jul]. Available from: <https://www.rvo.nl/sites/default/files/2021/06/Healthcare-in-The-Philippines.pdf>.
13. Breckenkamp C, Buisman LR. Financial protection from health spending in the philippines: policies and progress. *Health Policy Plan*. 2016 Sep;31(7):919-27. doi:10.1093/heapol/czw011. PMID: 27072948.
14. Quimbo S, Florentino J, Peabody JW, Shimkhada R, Panelo C, Solon O. Underutilization of social insurance among the poor: evidence from the Philippines. *PLoS One*. 2008;3(10):e3379. doi:10.1371/journal.pone.0003379. PMID: 18852881; PMCID: PMC2557126.
15. Philippine Health Insurance Corporation, Implementation of the igroup program for organized groups [Internet]. 2012 [cited 2021 Jul]. Available from: https://www.philhealth.gov.ph/circulars/2012/circ44_2012.pdf.
16. Patashnik EM, Gerber AS, Dowling CM. *Unhealthy Politics*. New Jersey: Princeton University Press; 2017.
17. McWilliams JM, Schwartz AL. Focusing on high-cost patients — the key to addressing high costs? *N Engl J Med*. 2017 Mar 2;376(9):807-9. doi: 10.1056/NEJMp1612779. PMID: 28249127; PMCID: PMC5503135.
18. Spyrtos D, Chloros D, Michalopoulou D, Sichletidis L. Estimating the extent and economic impact of under and overdiagnosis of chronic obstructive pulmonary disease in primary care. *Chron Respir Dis*. 2016 Aug;13(3):240-6. doi:10.1177/1479972316636989. PMID: 26965221; PMCID: PMC5720183.
19. Morales DD, Dans AML, Punzalan FER, Festin MR. Effective screening for diseases among apparently healthy Filipinos: A need for Philippine Guidelines on Periodic Health Examinations (PHEX). *Public Policy*. 2002 Jan-Jun;6(1):2-33.
20. Allotey P, Tan DT, Kirby T, Tan LH. Community engagement in support of moving toward universal health coverage. *Heal Syst Reform*. 2019;5(1):66-77. doi:10.1080/23288604.2018.1541497. PMID: 30924744.
21. Camiling-Alfonso R. Final Report: Technical Assistance for the Costing of Inpatient Benefit Package for Adult and Pediatric UTI, Age and Pneumonia. Quezon City: Alliance for Improving Health Outcomes; 2017.
22. Hatch B, Tillotson C, Angier H, Marino M, Hoopes M, Huguet N, et al. Using the electronic health record for assessment of health insurance in community health centers. *J Am Med Inform Assoc*. 2016 Sep;23(5):984-90. doi:10.1093/jamia/ocv179. PMID: 26911812; PMCID: PMC6375120.
23. Jeet G, Masaki E, Vassall A, Prinja S. Costing of essential health service packages: a systematic review of methods from developing economies. *Value Health*. 2021 Nov;24(11):1700-13. doi: 10.1016/j.jval.2021.05.021. PMID: 34711371.
24. Zeng W, Halasa YA, Cros M, Akhter H, Nandakumar AK, Shepard DS. Costing essential services package provided by a non-governmental organization network in Bangladesh. *Health Policy Plan*. 2017 Dec 1;32(10):1375-85. doi: 10.1093/heapol/czx105. PMID: 34711371.
25. Bowie C, Mwase T. Assessing the use of an essential health package in a sector-wide approach in Malawi. *Heal Res Policy Syst*. 2011 Jan 17;9:4. doi:10.1186/1478-4505-9-4.
26. Duong DB, Van Minh H, Ngo LH, Ellner AL. Readiness, availability and utilization of rural Vietnamese health facilities for community based primary care of non-communicable diseases: a cross-sectional survey of 3 provinces in Northern Vietnam. *Int J Health Policy Manag*. 2019 Mar;8(3):150-7. doi:10.15171/ijhpm.2018.104. PMID: 30980631; PMCID: PMC6462192.
27. Ved RR, Gupta G, Singh S. India's health and wellness centres: realizing universal health coverage through comprehensive primary health Care. *WHO South-East Asia J Public Health*. 2019 Apr;8(1):18-20. doi:10.4103/2224-3151.255344. PMID: 30950425.
28. Organisation for Economic Co-operation and Development, Strategies to reduce wasteful spending: turning the lens to hospitals and pharmaceuticals [Internet]. 2018 [cited 2021 Jul]. Available from: doi:10.1787/health_glance_eur-2018-5-en
29. Wallar LE, De Prophetis E, Rosella LC. Socioeconomic inequalities in hospitalizations for chronic ambulatory care sensitive conditions: a systematic review of peer-reviewed literature, 1990-2018. *Int J Equity Health*. 2020 May 4; 19(1):60. doi:10.1186/s12939-020-01160-0. PMID: 32366253; PMCID: PMC7197160.
30. Obermann K, Jowett M, Kwon S. The role of National Health Insurance for achieving UHC in the Philippines: a mixed methods analysis. *Glob Health Action*. 2018;11(1):1483638. doi:10.1080/16549716.2018.1483638. PMID: 29914319; PMCID: PMC6008596.
31. Uchimura H. Health financing for accessible services: a study of the Philippines. In: Uchimura H, ed. *Making Health Services More Accessible in Developing Countries*. London: Palgrave Macmillan; 2009. pp. 51-79. doi: 10.1057.9780230250772_3
32. Department of Health, Implementing rules and regulations of the universal health care act (republic act no. 11223) [Internet]. 2019 [cited 2021 Jul]. Available from: https://www.doh.gov.ph/sites/default/files/health_magazine/UHC-IRR-signed.pdf
33. Department of Health, CY 1991 onwards budget appropriation [Internet]. 2020 [cited 2021 Jul]. Available from: <https://doh.gov.ph/doh-budget>
34. Department of Budget and Management, 2021 national budget [Internet]. 2021 [cited 2021 Jul]. Available from: www.dbm.gov.ph
35. Santos MS, Cheng-Fernandez EDS, Liwanag MAL, Ulmido MLB, Say-awen LRA, Budget Briefer 2021 [Internet]. 2020 [cited 2021 Jul]. Available from: <https://doh.gov.ph/sites/default/files/publications/2021-Budget-Briefer.pdf>
36. Ulep VGT, Dela Cruz NO. Analysis of out-of-pocket expenditures in the Philippines. *Philippine Journal of Development*. 2013; XL(1&2):93-123.
37. El Omari S, Karasneh M. Social health insurance in the Philippines: Do the poor really benefit? *J Econ Finance*. 2021;45(1):171-87. doi:10.1007/s12197-020-09525-5.
38. Cuenca JS. Analysis of the 2020 president's budget [Internet]. 2020 [cited 2021 Jul]. Available from: <https://pidswebs.pids.gov.ph/CDN/PUBLICATIONS/pidsdps2013.pdf>
39. Monsod TMC. Budget credibility in the Philippines' health sector: regional comparisons and case studies [Internet]. 2020 [cited 2021 Jul]. Available from: <https://internationalbudget.org/publications/budget-credibility-in-the-philippines-health-sector-regional-comparisons-and-case-studies/>
40. Liwanag HJ, Wyss K. Optimising decentralisation for the health sector by exploring the synergy of decision space, capacity and accountability: insights from the Philippines. *Heal Res Policy Syst*. 2019 Jan 10;17(1):4. doi:10.1186/s12961-018-0402-1. PMID: 30630469; PMCID: PMC6327786.

APPENDICES

Appendix A. Supplementary Cost Method Details

Process Overview. In costing the lab tests, X-ray, ultrasound, and ECG procedures, the processes were first identified through interviews with designated personnels and reference to readily available hospital manuals. Meetings were set with the personnel in-charge as they introduced the overall process, the specific machines used, as well as the UHS personnel involved. Interviews with the medical director were also conducted.

Specific Costs. The costs for the following were then obtained as follows:

- **Direct Materials** – Costs for the direct materials were primarily gathered from the quotation records shown by the interviewees. As for the costs of the materials which were acquired more than a year ago, or for those whose quotations can no longer be found, the interviewees gave an estimate of the materials' current price. Some of the estimates were also obtained from the prices available on the internet.
- **Labor** – The cost for labor of the procedures were obtained by referring to the payroll list provided by the administrative office. The personnel involved in the procedures were identified. Their annual salaries were added together and were divided by the annual census for total number of procedures performed for the year.
- **Overhead** – The total overhead cost is composed of (1) office supplies, (2) security, (3) janitorial, (4) telephone, (5), electricity, (6) water, and (7) administrative expenses. For the office supplies and telephone, the actual costs incurred by the Laboratory, X-Ray, and Ultrasound Departments for the year were determined. For the security, the total annual security expense is divided into nine service areas, with the x-ray & ultrasound, and the laboratory departments both receiving 1/9 of the total cost. For the janitorial services, the annual cost is allocated by floor area. For the electricity, all equipment and appliances per department were listed, and their corresponding power consumption is determined. For the water expenses, the total annual water bill is divided into six areas, one of which is the laboratory. The x-ray and ultrasound were not included since they only consume minimal water. The administrative expenses are composed of the expenses attributable to the billing and collections section, i.e., staff salary, electricity, telephone, office supplies, security, and janitorial services. After having determined the corresponding overhead cost per department, these costs were allocated to each test by dividing each cost pool (e.g., Office Supplies of the Laboratory) by the annual number of tests performed in the said department (e.g., annual number of laboratory tests). The resulting figure is the overhead cost per test (e.g., Office Supplies per test).

Costing of Consultations

- **Getting salaries** – Annual employee salaries were provided by the administrative staff. The clinical doctors, one triage personnel and one with a midwife designation were the relevant employees in this part of the study. Total annual salary of the relevant employees was taken as the cost objects because these are the person involved in a consultation.
- **Getting the census** – Information about the number of consults for the previous year was taken to estimate consults for every doctor per year. This will be the cost driver for the consults.
- **Estimating work-hour allocations** – Each relevant employee spends a certain amount of time doing actual consultation work and administrative work. An interview with the medical director provided the authors with information about estimated work hours (termed doctor hours) given for each kind of work in a month. Total salary for each employee is multiplied by the % of doctor hours allocated to consultation work to arrive at the cost of consultation.
- **Determining cost per consultation** –The cost of consultation of all relevant employees were added and divided by the number of consults per year. This is the estimated cost per consultation.

Appendix B. Equipment Cost

Item	Annual Equipment Cost (Php)
<i>Admin</i>	364,790.01
<i>Billing</i>	40,213.50
<i>Conference room</i>	32,186.11
<i>Director's office</i>	44,240.65
<i>Physicians</i>	115,131.40
<i>Hallway</i>	141,564.06
<i>External</i>	28,710.68
<i>Supply</i>	223,313.71
<i>Records</i>	16,110.35
Total equipment cost	1,006,260.47

The Cost of Primary Care

Appendix C. Supporting Material and Manpower Costs

Item	Cost of Item (PhP)	Life Years ^a	Value per Year
Material logistics			
Equipment outlay (EO)			
Server (i5, 16GB RAM, 2x500GB HDD, no OS, 14" monitor)	39,900.00	3	13,300.00
Workstation (i5, 4GB RAM, 2x500GB HDD, no OS, 14" monitor)	333,450.00	3	111,150.00
Network switches (gigabit 24-port compact un-manage switch switching capacity: 48 gbps forwarding capacity: 35.7 mbps)	12,160.00	3	4,053.33
Access points (wireless-N range extender, Wireless-N-2.4GHz, 802.11n)	11,940.00	3	3,980.00
Crimping tool	2,400.00	5	480.00
Cable tester	1,900.00	5	380.00
500pcs RJ45 connector	5,000.00	3	1,666.67
Network cable	27,200.00	3	9,066.67
Laser printer	150,000.00	3	50,000.00
A5 Bond Paper (reams)	8,250.00	1	8,250.00
Asus X455LA-WX47T0 Core i3-5005u, 500GB HDD, 4GB RAM DDR3, Intel HD graphics, Windows 10	67,485.00	3	22,495.00
Fuji Xerox DocuPrint with toner	93,150.00	3	31,050.00
Desktop Intel Haswell refresh i5-4460	39,900.00	3	13,300.00
Sub-total			269,171.67
EHR capacity building expenses			
Maintenance and other operating expenses			
Salary of one computer programmer I			267,108.00
Salary of one IT officer I			480,000.00
Electronic Health Records system			300,000.00
Sub-total			1,047,108.00
Auxiliary expenses			
Indirect cost			
Utilities			50,000.00
One administrative staff			30,000.00
Sub-total			80,000.00
Total			1,396,279.67

a Indicates the predicted number of years the item can be utilized