



Unit Cost Calculation of Indonesian National Health Insurance System (BPJS) Outpatient Care for Hypertension Diagnosis Patient in 2019 Over Harapan Keluarga Mataram Hospital

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Health financing often becomes an obstacle to accessibility of health services by the community. This situation especially occurs in situations where health financing must be borne by yourself (out of pocket) in the cash health service payment system (fee for service). Hypertension is a chronic disease that requires regular treatment and medication in daily basis. This causes a very high need of health services for hypertension patients. This study was a descriptive analysis using qualitative methods aimed to analyze unit costs of hypertension outpatients at Harapan Keluarga Hospital using the relative value unit (RVU) method. A total of 908 samples of hypertensive patients such as 292 (who used amlodipine and nifedipine), 64 (who used candesartan, Abvask, and hyperil), 69 (who used concor and Abvask), 60 (who used hyperil, CPG, and Myonap), 67 (who used Abvask, CPG, and nifedipine), 55 (who used Abvask), 280 (who used amlodipine), 20 (who used nonprescription control). By this study, we can conclude that with a quality information system, top management can be helped in making the right decisions.

Keywords: Unit Cost, Hypertension, Outpatient Care, Fee for Service, Health Financing.

1. INTRODUCTION

The Center for Financing and Security through its official website states that the increasing trend of health costs makes it difficult for people to access the health services they need [1]. This situation especially occurs where health financing must be borne by yourself (out of pocket) in the cash health service payment system (fee for service). The implementation of Public Health Insurance uses a service financing system known as the INA-CBG's (Indonesian Case Base Groups) system which is a software for controlling health service costs because it relates to quality, equity, coverage in the health system and payment mechanisms for mixed case-based patients.

Hypertension is a major risk factor for stroke, which is often referred to the silent killer because hypertension increases the risk of stroke by 6 times. Hypertension is defined as a blood pressure of more than 140/90 mmHg. The higher the patient's blood pressure means the higher the risk to have a stroke. Hypertension may damage the walls of blood vessels which can easily lead to blockage and even rupture of blood vessels in the brain [2]. Hypertension disease continues to increase year after year, not only in Indonesia, but also in the worldwide. As many

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1.13 billion people in the world or 1 in 3 people in the world are diagnosed with hypertension. The number of people with hypertension increases every year, it is estimated that by 2025 there will be 1.5 billion people affected by hypertension. Hypertension occurred in the age several groups such as 31-44 years (31.6%), age 45-54 years (45.3%), age 55-64 years (55.2%) [2, 3]. Harapan Keluarga Hospital is a class C private hospital established in Mataram and has supported government programs by participate the National Health Insurance program itself. Harapan Keluarga Mataram Hospital is a private hospital that has used a payment system based on INA CBG's for outpatients and inpatients. Based on reports from the outpatient unit of Harapan Keluarga Hospital, many patients take advantage of The Indonesian National Health Insurance System (BPJS) to get outpatient care for cases of hypertension. Significant increases have begun to be felt since the tiered referral regulations are increasingly emphasized by the BPJS. With the tariffs set by the government, hospitals need to make adjustments and cost control to these rates. As an illustration, private sector hospital rates are determined by the Hospital Director himself on the basis of the approval of the Hospital owner. The Harapan Keluarga Hospital, in

this case, has not yet calculated the unit costs, especially for hypertension outpatient services and there is also a difference between the amount of hypertension outpatient rates set by the hospital and the rates set by the BPJS. There are differences in hospital rates with INA-CBGS rates, for example one outpatient with hypertension diagnosis, the total billing of hospital rate is 279,191 IDR while INACBG's claim rate for hypertension outpatient care is 192,100 IDR. For this reason, it is necessary to do a cost analysis and cost efficiency analysis for hypertension outpatient services so that the hospital does not get a loss. This descriptive study aims to analyze the unit cost of hypertension outpatient care at Harapan Keluarga Hospital using the relative value unit (RVU) method. The benefit of this research is that it can contribute to the science of hospital management, especially in determining the unit cost unit for hypertensive outpatient's care related to the difference in cost calculations using the relative value unit (RVU) method with the INACBG's rate.

2. METHODOLOGY

Hypertension is a disease with various medical conditions. In most patients. the pathophysiological and etiology are unknown (essential or primary hypertension). Primary hypertension cannot be cured but can be controlled. Another group of the population with low percentages has a specific cause, known as secondary hypertension. Hypertension is a condition in which a person experiences an increase in blood pressure above normal, resulting in an increase in morbidity and mortality, blood pressure in the systolic phase of 140 mmHg indicates the phase of blood being pumped by the heart and the phase diastolic 90 mmHg indicates the blood phase returning to the heart [3, 4]. Table I shows classification of blood pressure levels based on ESH/ESC [5].

Table I. Classification of Blood Pressure Levels (mmHg) based on ESH/ESC.

Classification	Systolic	Condition	Diastolic
Optimal	< 120	And	< 80
Normal	120 – 129	and/or	80 – 84
High Normal	130 – 139	and/or	85 – 89
Hypertension stage I	140 – 159	and/or	90 – 99
Hypertension stage II	160 – 179	and/or	100 – 109
Hypertension stage III	> 180	and/or	> 110
Isolated systolic hypertension	> 140	And	< 90

A. Hypertension Classification

High blood pressure or hypertension is known by 2 types of classification, primary hypertension and secondary hypertension. Here, the primary hypertension is a condition in which high blood pressure occurs as a result of the impact of lifestyle and environmental factors. Someone whose diet is uncontrolled and results in being

overweight or even obese, is the first trigger for developing high blood pressure. Likewise, someone who is in a highly stressful environment or condition is very likely to develop high blood pressure, including people who do not exercise regularly can experience high blood pressure. Furthermore, the secondary hypertension is a condition where there is an increase in high blood pressure as a result of someone experiencing/suffering from other diseases such as heart failure, kidney failure, or damage to the body's hormone system. Meanwhile, in pregnant women, blood pressure generally increases at 20 weeks of pregnancy. Especially in women whose weight is above normal or obese.

B. Cost

Unit cost is the total cost associated with the units produced divided by the number of units produced [6]. The definition of unit cost is the cost incurred to produce one unit of product or service, which is usually based on an average [7]. Here, unit costs are the costs calculated to produce a product unit [7].

C. Cost Classification

Cost is not the same as expense. Costs are resources that are sacrificed or given up to achieve a specific goal. Expenses are costs that have been used to obtain revenue. All expenses are costs, not all costs are expenses. Cost classification is very important in order to provide a meaningful overview of cost data. The concept of cost classification is the use of different costs for different purposes [7]. The most commonly used classifications are based on the relationship between costs as follows:

- Product (one lot, batch, or unit of a finished good or service).
- Consists of: product cost/total manufacturing cost and period cost/commercial expense.
- Production volume. Consists of: fixed cost, variable cost and semi variable cost.
- Department, process, cost center, or other sub-division of manufacturing. Consists of: direct cost and indirect cost.
- Accounting period. Consists of: capital expenditure and revenue expenditure.
- A decision, action or evaluation. Consists of: differential cost/marginal cost/incremental cost, out of pocket cost, sunk cost, opportunity cost, unavoidable cost, avoidable cost, controllable cost and uncontrollable cost.

This study is a descriptive analysis study using qualitative methods. The descriptive study aims to analyze the unit cost of outpatient hypertension at Harapan Keluarga Hospital using the relative value unit (RVU) method.

3. RESULTS AND DISCUSSION

In order to achieve the result, we analyze the Depreciation on Building Investment as Direct Cost of Hypertensive Outpatient Care in 2019 (see Table II) while the depreciation on medical devices investment as direct cost of hypertensive outpatient care in 2019 is showed in Table III.

Table II. Depreciation on Building Investment as Direct Cost of Hypertensive Outpatient Care in 2019

No	Room	Floor area	Year of Purchase	Price	Duration of Use	Period of Use	Inflation	AIC	Proportion for HT
1	Admission and Cashier	382.5	2011	4,028,361.812	9	40	2,72%	128.222.304	1,988,350
2	Internal Medicine Specialist Clinic	12,58	2011	132.488.344	9	40	2,72%	4,217,089	482,500
3	Pharmacy	178,13	2011	1.876.005.463	9	40	2,72%	59,713,043	925,973
4	Lab	162	2011	1.706.129.709	9	40	2,72%	54,305,917	842,125
Total								246,458,353	4,238,948

Table III. Depreciation on Medical Devices Investment as Direct Cost of Hypertensive Outpatient Care in 2019

No	Device	Number of Device	Price	Year of Purchase	Total Price	Inflation	Period of Use	Duration of Use	AIC	Proportion for HT
1	Sphygmomanometer	1	3.636.859	2013	3.636.859	2,72%	7	8	548,557	62,763
2	Adult scales	1	7.327.467	2013	7.327.467	2,72%	7	8	1,105,221	126,454
3	Trolley for wound care	1	2.788.381	2013	2.788.381	2,72%	7	8	420,579	48,121
4	Portable oxygen tube	1	3.561.298	2013	3.561.298	2,72%	7	8	537,160	61,459
5	Patient bed	1	5.192.214	2013	5.192.214	2,72%	7	8	783,155	89,605
Total Direct AIC for Medical Devices									3.394.671	388.402

The Harapan Keluarga Hospital building has a building area of 11,000 m² where all services are located in that building. The cost of direct investment in the building will be calculated using the Annualized Investment Cost (AIC) formula and the results will be proportioned based on the number of hypertensive street patients in 2019 with the total number of patients (outpatient and inpatient) in 2019. Investment in medical devices for hypertensive patient care consists of investment in internal medicine specialist tools. Medical devices that have exceeded the age of use, are not depressed because there is no further investment incurred because it is assumed that this material cannot be used again. The method of calculating the investment cost of medical equipment for internal medicine specialist polyclinic uses the same method as calculating the investment cost of the building, where after the medical equipment is depreciated, it is calculated using a system of proportions of the number of visits to street patients with high-intensity patients in 2019 compared to the total number of visits for street patients for medical specialists in 2019. Unlike the way to calculate the depreciation value for building investment and medical devices, the depreciation value for non-medical devices by researchers is obtained directly from the RSHK Profit and Loss Report 2019. Researchers do not get detailed data on what non-medical equipment are direct costs for Outpatient Hypertension because of all the non-medical equipment obtained by the hospital as a whole. In 2012, the hospital paid the entire non-medical equipment investment value to an interior design service provider so that the hospital did not have detailed data related to non-medical investments. The depreciation value of non-medical investments is obtained from the 2019 hospital income statement which is then proportioned to Outpatient Hypertension by dividing the number of Outpatient Hypertension patients in 2019 with

all visits of outpatient and inpatient patients in 2019. Operational costs are the costs incurred to produce a product whose amount depends on the volume of production or is a variable cost. Operational costs for the treatment of hypertensive outpatient care includes employee salary costs, medical service fee for doctors,

medicine costs for hypertension, telephone costs, electricity, water, and stationary costs. These costs are obtained by researchers from the 2019 RSHK income statement, so that these costs are the overall costs for the hospital. In contrast to the calculation of the proportion of investment costs, the first proportion of operational costs is carried out to calculate unit costs that are directly related to Outpatient Hypertension services, then it is proportioned again to obtain Outpatient Hypertension operational costs in the same way as proportioning investment costs against Outpatient Hypertension (see Table IV) while Operational Costs as Direct Costs of Hypertension Outpatient Care in 2019 is showed in Table V.

Table IV. Depreciation on Non-Medical Equipment Investment as Direct Cost of Hypertension Outpatient Care in 2019

Non-Medical Equipment Investment	Proportion for Hypertension
744.665.271	12.262.869

Table V. Operational Costs as Direct Costs of Hypertension Outpatient Care in 2019

No	Room	Cost Component	Amount of Cost (Entire Hospital)	Amount of Cost (Unit)	Proportion for HT
1	Admission and Cashier	Employee salary		575,743,906	8,928,091
		Electricity	1,188,230,387	41,518,011	444,038
		Water	1,640,000	179,825	1,933
		Telephone	97,632,444	10,705,512	165,008
		Stationary	25,387,356	2,783,701	43,167
2	Internal Medicine Specialist Clinic	Employee salary		23,664,458	2,707,577
		Medical services fee for specialist doctors			54,480,000
		Electricity	1,188,230,387	1,358,903	155,479
		Water	1,640,000	14,386	1,646
		Telephone	97,632,444	856,425	97,983
3	Pharmacy	Stationary	25,387,356	222,696	25,480
		Employee salary		399,539,479	5,577,998
		Electricity	1,188,230,387	19,241,771	206,788
		Water	1,640,000	122,281	1,314
		Telephone	97,632,444	7,279,612	101,631
4	Lab	Stationary	25,387,356	1,892,917	26,427
		Employee salary		295,170,020	4,577,217
		Medical services fee for clinical pathologists		120,000,000	1,860,846
		Electricity	1,188,230,387	17,499,393	188,063
		Water	1,640,000	83,509	1,450
	KSO Lab	Telephone	97,632,444	5,566,762	86,324
		Stationary	25,387,356	1,447,525	22,447
		Employee salary		365,539,500	5,668,479
		Electricity	1,188,230,387	17,499,393	188,063
		Water	1,640,000	83,509	1,450
Total Direct Operational Costs			1,890,240,392	186,482,092	

Furthermore, Table VI shows Maintenance Costs as Direct Costs of Hypertension Outpatient Care in 2019 over Harapan Keluarga Hospital.

Table VI. Maintenance Costs as Direct Costs of Hypertension Outpatient Care in 2019

No	Cost Component	Amount of Cost (Entire Hospital)	Amount of Cost (Unit)	Proportion for HT
1	Admission and Cashier			
	Room Maintenance	28.643.950	996.028	15,445
	Non-Medical Maintenance	19.461.000	2.133.882	33,090
2	Internal Medicine Specialist Clinic			
	Room Maintenance	28.643.950	32.758	3,748
	Non-Medical Maintenance	19.461.000	170.711	19,532
3	Pharmacy			
	Room Maintenance	28.643.950	463.850	6,476
	Non-Medical Maintenance	19.461.000	1.451.039	20,258
4	Lab			
	Room Maintenance	28.643.950	421.847	6,542
	Non-Medical Maintenance	19.461.000	1.109.618	17,207
Total Maintenance Costs				122.298

Maintenance costs are calculated as direct costs include maintenance in the admission room and cashier, internal medicine specialist clinic, laboratory room and pharmacy room. Maintenance costs are obtained based on data from Finance (see Table VII).

Table VII. Depreciation Costs for Building Investment as Indirect Costs of Hypertension Outpatient Care in 2019

No	Investment	Floor area	Year of Purchase	Price	Duration of Use	Period of Use	Inflation	AIC	Proportion
1	Medical Record	75,76	2011	797.878.930	9	40	2.72%	25.396.397	393,823
2	Laundry	91,44	2011	963.015.436	9	40	2.72%	30.652.673	475,333
3	IT	47,42	2011	499.411.548	9	40	2.72%	15.896.213	246,503
4	Administration and Managerial	284,51	2011	2.996.363.972	9	40	2.72%	95.373.928	1.478,969
Total								167.319.212	2.594.629

Indirect costs are costs that come from several interrelated service units, but their use is not directly used. The supporting units consist of medical records, laundry, IT and human resources as well as administrative and managerial buildings. An indirect cost calculation on the investment cost of a building is carried out using a depreciation formula which results in proportion to the area of space of each supporting unit, which will then be proportioned for outpatient hypertension (see Table VIII).

Table VIII. Operations and Maintenance Costs as Indirect Costs of Hypertension Outpatient Care in 2019

No	Room	Cost Component	Amount of Cost (Entire Hospital)	Amount of Cost (Unit)	Proportion for HT
1	Medical Record	Employee salary		283.187.600	5.266.125
		Electricity	1.188.230.387	8.183.667	152.183
		Water	1.640.000	71.930	1.338
		Telephone	97.632.444	4.282.125	79.630
		Stationary	25.387.356	1.113.481	20.706
		Employee salary		115.200.000	2.142.246
2	Laundry	Electricity	1.188.230.387	9.877.435	183.680
		Water	1.640.000	35.965	669
		Telephone	97.632.444	2.141.062	39.815
		Stationary	25.387.356	556.740	10.353
		Employee salary		70.200.000	1.305.431
		Electricity	1.188.230.387	5.122.353	95.255
3	IT	Water	1.640.000	14.386	268
		Telephone	97.632.444	856.425	15.926
		Stationary	25.387.356	222.696	4.141
		Employee salary	1.280.087.870	1.067.461.328	19.850.390
		Electricity	1.188.230.387	30.733.039	571.508
		Water	1.640.000	316.491	5.885
4	Administration and Managerial	Telephone	97.632.444	18.841.349	350.372
		Stationary	25.387.356	4.899.314	91.107
		Total		30.187.028	

Operational and maintenance costs for the supporting unit in the calculation are obtained from the hospital income statement for 2019 as a whole and will be proportioned according to the number of employees who are directly related to hypertension outpatient services, all hospital staff, and all patients, inpatient and outpatient in 2019 (see Table IX).

Table IX. Fixed Costs of Outpatient Hypertension

Direct Cost as Fixed Cost	Total	%	%
Depreciation on building investment	4,238,948	7%	
Depreciation on medical devices	388.403	0,7%	
Depreciation on non-medical devices	12.262.869	20%	
Operational	25,221,912	41%	
Maintenance	122,298	0,2%	
			69%
Indirect Cost as Fixed Cost			
Depreciation on Investment	2.594.629	4,2%	
Operations And Maintenance	16,712,278	27%	
			31%
Total Fixed Cost		61,559,754	100%

Based on the table above, it can be seen that the largest component of fixed costs is direct costs, namely operational costs excluding medical services fee for doctors, up to 69% beating depreciation costs on building investment. The indirect costs which are fixed costs of hypertension outpatient care has a proportion of 31% of the total fixed costs in which the components of operational and maintenance costs are the largest (see Table X).

Table X. Variable Hypertension Outpatient Costs

Direct Cost as Variable Cost	Total	%
Medical services fee	54,480,000	34%
Medicines	101,111,701	63%
Laboratories	5,668,479	4%
Total Variable Cost	161,260,180	100%

In accordance with the table above, the results show that the amount of variable costs for outpatient hypertension care is IDR 161,260,180, where the medicine costs component has the greatest proportion of IDR 101,111,701 (63%) of the total hypertension outpatient variable costs in the study. The second largest cost is the cost for medical services fee, amounting to IDR 54,480,000 or 34% of the total variable costs for hypertension outpatient care (see Table XI).

Table XI. Table 11. Total Costs and Unit Costs for Hypertension Outpatient Care in 2019

Investment	Direct Cost	Total Amount (IDR)	%	Unit Cost
Building		4,238,948		
Medical		388.403		
Non-Medical		12.262.869		
Total		16,890,220		
Operational				
Operational		186,482,092		
Total		203,372,312		
Maintenance				
		122,298		
Total Direct Cost		203,494,610	91%	
Indirect Cost				
Building		2.594.629		
Operational		16,712,278		
Total		19,306,906	9%	
Total Cost		222,802,526	100%	245,376

Based on the table above, the total direct cost of outpatient hypertension care is IDR 203,494,610 (91%)

and the indirect costs for outpatient hypertension care is IDR 19,306,906 (9%). The total cost of outpatient hypertension care was obtained from adding up the total direct costs and the total indirect costs so that the total cost of Outpatient Hypertension was IDR 222,802,526, -. The unit cost of the hypertension outpatient care can be obtained by dividing the total cost of Outpatient Hypertension in 2019 with the number of visits Outpatient Hypertension in 2019. Based on the calculation of the unit cost above, the unit cost of outpatient Hypertension is IDR 245,376.

Furthermore, the total unit cost for outpatient hypertension is IDR 245,376. This calculation is higher than the cost guaranteed by BPJS Kesehatan using the INACBGs system which is only Rp. 192.100. The difference between the cost of the Harapan Keluarga Hospital and INACBGs is Rp. 53,276 per patient. Harapan Keluarga Hospital suffered a loss. The cost component that caused losses in this study was fixed costs, namely the small number of internal medicine poly visits at the Harapan Keluarga Hospital and variable costs, namely there were variations in the administration of drugs and consumable medical materials which were still varied and also found in laboratory examinations, such as complete blood count and lipid profile which not all hypertension outpatients get these laboratory tests.

From the results of this study, it was found that there were still many variations of branded drugs given to BPJS participant patients which caused high costs. So, to be able to reduce costs, efficiency must be carried out by applying the Clinical Pathway to outpatient hypertension besides that there are also limitations in this study where there is no data related to assets or investment goods, especially for non-medical investments, which should be a concern for hospital managers to make policies new related to the formation of an asset recording team where the team is responsible for recording all assets owned by the Hospital (see Figure 1).

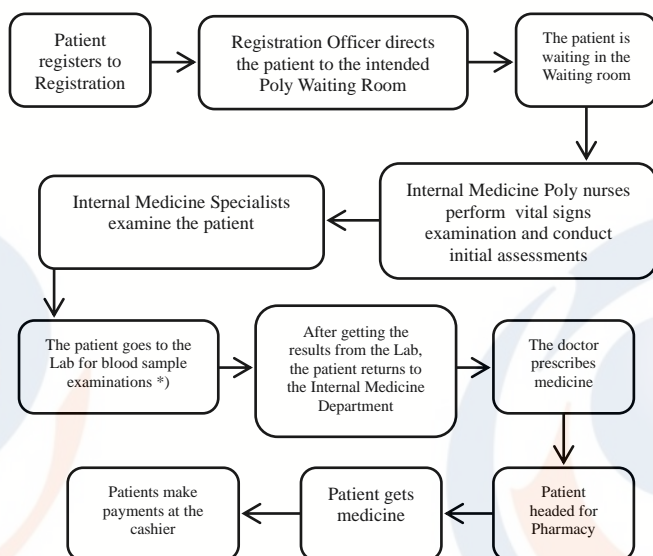


Figure 1. Service flow over Harapan Keluarga Hospital

In addition, the recorded assets with good records can make it easier for the hospital to identify the condition of these assets based on the year they were acquired, the useful life and the useful life, and can facilitate the process of calculating depreciation on investment.

4. CONCLUSIONS

The study Unit Cost Calculation of BPJS Outpatient Care for Patient with Hypertension Diagnosis in 2019 in Harapan Keluarga Mataram Hospital has been successfully. Here, the 908 samples taken and from the analysis that has been described in the discussion, it can be concluded that the Harapan Keluarga Hospital has suffered losses. Harapan Keluarga Hospital has suffered losses and has to make efficiency by increasing the number of visits to outpatient polyclinics and also decreasing the administration of various drugs. In addition, medical materials were still diverse. The cost component that caused losses in this study was fixed costs, namely the small number of internal medicine poly visits at the Harapan Keluarga Hospital and variable costs, namely there were variations in the administration of drugs and consumable medical materials which were still varied and also found in laboratory examinations, such as complete blood count and lipid profile which not all hypertension outpatients get these laboratory tests. A total of 908 samples of hypertensive patients such as 292 (who used amlodipine and nifedipine), 64 (who used candarin, Abvask, and hyperil), 69 (who used concor and Abvask), 60 (who used hyperil, CPG, and Myonap), 67 (who used Abvask, CPG, and nifedipine), 55 (who used Abvask), 280 (who used amlodipine), 20 (who used nonprescription control). From the explanation above, we can conclude that with a quality information system, top management can be helped in making the right decisions.

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