European Journal of Business and Management Research
www.ejbmr.org

Comparison Analysis of Rates by Unit Cost and INA-CBGs Rates in Hemodialysis Services at Hospital X

Wina Fibionisa, Yanuar Ramadhan, and M. Natsir Nugroho

ABSTRACT

Hemodialysis is a method of kidney replacement treatment in patients with chronic kidney failure. This treatment is carried out routinely with a frequency of 2-3 times a week. This study aims to develop a pattern of hemodialysis rates based on unit cost calculations using the Activity-based Costing (ABC) method and analyze differences with INA-CBGs rates at X Hospital. This study used a quantitative method with a descriptive-analytical research design, which carried out hemodialysis unit cost analysis based on an Activity-based Costing approach, as well as a comparative study to analyze differences in hemodialysis unit costs and INA-CBGs rates.
Sampling in this study used a purposive sampling method with a total sample of 118 hemodialysis measures in December 2021. The data sources used were primary data and secondary data. Data collection used interview and observation methods. The unit cost calculation was carried out using the ABC method, and the different test was carried out using the Wilcoxon Match-Pairs Test. The results showed that the unit cost for hemodialysis services using the ABC method was Rp. 927,554.95. This result is higher than the INA-CBGs rate of Rp. 879,100, - with a negative difference of Rp. 48,454.95 or 5.5% of the INA-CBGs rate for 1 hemodialysis action and Rp. 729,198,542.55 for all hemodialysis actions during 2021. The results of the different tests obtained a p-value lower than 0.05, so that H0 was rejected, and it was concluded that there is a significant difference between hemodialysis rates based on unit cost and INA-CBGs rates. The determinants of the difference in tariffs are the difference in the method of calculation, the amount of employee salary costs, the difference in rates for doctors' services, the use of consumables, medicines, and supporting examinations, as well as the policy on the use of dialyzer reuse.

Keywords: Activity-based Costing unit cost method, hemodialysis tariff, hemodialysis unit cost, INA-CBGs tariff.

Submitted: June 01, 2023

Published: September 17, 2023

ISSN: 2507-1076

DOI: 10.24018/ejbmr.2023.8.5.1872

W. Fibionisa*
Esa Unggul University, Indonesia.
(e-mail: wina2106@gmail.com)
Y. Ramadhan
Esa Unggul University, Indonesia.
(e-mail: yanuar.ramadhan@esaunggul.ac.id)
M. Natsir Nugroho
Esa Unggul University, Indonesia.
(e-mail: natsirnugroho@gmail.com)

****Corresponding Author***

I. Introduction

Chronic kidney disease (CKD) is a type of degenerative disease with the highest prevalence in the world. In Indonesia alone, hemodialysis is still the main choice of renal replacement therapy in the management of End Stage Renal Disease (Nugraha *et al*., 2017).

Along with the increasing number of patients with kidney failure, the number of hemodialysis procedures performed in Indonesia has also increased. At Hospital X, cases of kidney failure were included in the ten most common diseases in inpatient installations. The increasing diagnosis of kidney failure requiring hemodialysis in its treatment has resulted in an increase in hemodialysis patient visits at the X Hospital Hemodialysis Installation, with a total of 1,545 visits in 2021 and 15,049 hemodialysis procedures.

Most of the financing for hemodialysis measures at Hospital X follows the value set by the INA-CBG's rates for regional 1 class B Hospitals, which is Rp. 879,100,- because 99.77% of hemodialysis procedures at hospital X are paid for by BPJS Kesehatan. The general rate for hemodialysis measures is Rp. 800,000, - which is the rate since 2013.

Calculation of the hemodialysis unit cost using a thorough and accurate accounting method has never been done at Hospital X, so it is not known whether the hemodialysis installation is an operational surplus unit or even a deficit. If a comparison is made of the INA-CBGs rates with the applicable rates at Hospital X for hemodialysis measures, then there is a positive difference of Rp. 79,100,- for each Hemodialysis action. But is it true that there is a positive difference operationally at Hospital X? This needs to be proven because the rates at Hospital X are still the old rates that have been set since 2013 and have not been based on careful and accurate unit cost calculations. One of the cost analysis methods that can be used to calculate the unit cost is the Activity-based Costing (ABC) method. With ABC, a cost analysis can be carried out by tracing activities as the cause of costs. Activity-based costing is used to increase the

accuracy of cost analysis by improving the tracing of costs to products or to individual customers (Drury, 2018).

From the analysis of the application of the ABC method to calculating costs, it is hoped that the unit cost of hemodialysis measures at Hospital X can be determined which is more precise and accurate, as well as its comparison with INA-CBG's rates.

II. Theoretical Study

Hemodialysis is an action to filter blood outside the body using a machine and an artificial filter called a dialyzer, which functions as an artificial kidney. The dialysis machine makes the dialysis solution needed to remove excess water and waste from the blood (Levy *et al*., 2016). The goal of hemodialysis is to effectively remove uremic toxins and extra fluid from the blood due to impaired kidney function. The dialysis system is mainly composed of a dialyzer, dialysis machine, extracorporeal blood circuit, and water purification system (Mitra & Ell, 2020). The basic principle of hemodialysis is to circulate blood through small blood vessels that are bound by a thin membrane. On the other side of the membrane is the dialysis fluid, through which unwanted substances in the blood pass by diffusion (Hall & Hall, 2020).

Unit cost is defined as the result of dividing the total cost required by the number of product units produced (Hansen & Mowen, 2017). Costs are sacrifices or expenses to achieve certain goals (Blocher *et al*., 2019). Costs can be classified according to their nature, behavior, elements, functions, and classification for decision-making (Ganiyu, 2018). Classification, by nature, is a classification of costs based on the basic characteristics inherent in costs. This classification is divided into Direct Costs and Indirect Costs. Direct costs of products/services, namely costs that can be charged directly to products/services. These costs are charged as product/service costs through activities that produce the product/service concerned (Franklin *et al*., 2019). Indirect costs are routine costs and general costs that cannot be traced directly to the units produced, for example, indirect materials such as cleaning agents, indirect labor such as supervisor costs, general costs such as general maintenance costs, storage, etc. Indirect costs are usually referred to as manufacturing overhead costs (Ganiyu, 2018).

In calculating unit costs, unit cost analysis is carried out, which is an analysis technique for the costs incurred by activities in each unit. Unit cost analysis is an activity carried out to calculate the costs incurred by the hospital for the various services provided, as a whole, per unit or per activity, by calculating all costs in the unit, cost center to then be distributed to production units (St-Hilaire & Crépeau, 2000).

Activity-based Costing (ABC) is costing that begins with tracking the activities carried out to produce a product. Costing focuses on the activities performed to produce the product. This system assumes that activities are responsible for incurring costs and that products create demand for activities. Costs are charged to products based on each use of the product from each activity (Roberts, 2022). The data processing process in the ABC system is divided into two stages.

1) Activity-based Process Costing

It is the assignment of resources to activities by recording and classifying costs on an activity basis to provide cost data by activity.

2) Activity-based Object Costing

It is the assignment of activity costs to cost objects by further processing cost data and operating data to produce product/service cost information (Walther & Skousen, 2010).

The Activity-based Costing method has advantages and disadvantages compared to other cost analysis methods, including:

1) The ability to provide customers with an abundance of information about the activities used to produce products and services,
2) The ability to provide facilities for quickly setting up activity-based budgets,
3) Ability to provide cost information to monitor the implementation of cost reduction plans,
4) The ability to provide accurate and multidimensional costs of products and services produced.

The INA-CBGs tariff is a package tariff that includes all components of hospital resources used in both medical and non-medical services. The INA-CBGs tariff is a payment system using a package system, so it is expected that payments are more objective and can improve service quality and efficiency of healthcare costs (Ministry of Health of the Republic of Indonesia, 2016). The basis for setting the INA-CBG's rates is disease costing and coding data referring to the International Classification of Diseases (ICD) established and compiled by WHO. Costing data is obtained from selected hospitals (sample hospitals) representing hospital class, type of hospital, and hospital ownership (private and government hospitals), including all cost data incurred by hospitals, excluding drugs whose funding sources are from government programs (HIV, TB, and others), coding data obtained from PPK Jamkesmas hospital coding data. For the preparation of JKN rates, costing data was used from 137 government and private hospitals, as well as 6 million coding data (cases) (Doru, 2018). Based on Permenkes No. 52 of 2016 concerning Standard Health Service Tariffs in the Implementation of the Health Insurance Program, the tariff for hemodialysis measures for class B government hospitals in regional I is Rp. 879,100,- (Ministry of Health of the Republic of Indonesia, 2016).

A. Conceptual Framework

The research hypotheses formulated for the present study are presented below.

H0: There is no difference between the hemodialysis rates based on the unit cost ABC method and the INA-CBGs rates.

H1: There is a difference between the hemodialysis rates based on the unit cost ABC method and the INA-CBGs rates.

European Journal of Business and Management Research
www.ejbmr.org

III. Research Methodology

The methodology used in this research is a quantitative method with a descriptive analysis research design, which analyzes the unit cost of hemodialysis based on the Activity-based Costing approach, as well as a comparative study to analyze differences in the unit cost of hemodialysis and INA-CBGs rates.

The research was conducted at X Hospital from October to December 2022 using hospital data for the period January to December 2021. To conduct a different test, data from hemodialysis measures will be used in December 2021.

A. Data and Data Sources

The research data is in the form of primary data obtained from direct observations in the form of observations of hemodialysis service activities carried out starting from registration until the patient returns and in the form of in-depth interviews with the Director, Deputy Director for Services, Deputy Director General and Finance, Head of the Finance Section, Head of the Treasury Section, Head Hemodialysis Installation, Consultant Doctor of Internal Medicine, Nurse Head of Hemodialysis Room in connection with service procedures and financial documentation. In addition, this study also used secondary data in the form of data obtained from medical record documents, financial documents, asset documents and hemodialysis installation recording documents.

B. Data Collection Technique

In collecting data, the writer uses interview and observation methods.

The population in this study is hemodialysis at X Hospital in 2021, namely 15,049 procedures. The sampling technique using the purposive sampling method was hemodialysis with as many as 118 actions.

C. Data Analysis Procedure

In this study, data analysis was carried out as follows:

1) Identification and grouping of hemodialysis activities and costs.
2) Identification of direct and indirect costs in carrying out hemodialysis measures.
3) The calculation of overhead costs using the ABC method is carried out in two stages, namely Activity-based Process Costing and Activity-based Object Costing (see Section II for more details).
4) Description of the results of the analysis includes determining the cost categories and cost drivers of each cost category, imposing direct costs consumed at the hemodialysis installation, determining the amount of indirect costs for each activity using the proportion method at the hemodialysis installation, adding up the total direct costs and costs indirectly, calculating the unit cost of hemodialysis with the formula:

$$Unit\ Cost = \frac{Total\ Cost}{Number\ of\ Hemodialysis\ Visits} \quad (1)$$

5) Quantitative analysis using statistical difference tests using Wilcoxon Match-Pairs for two groups of hemodialysis rates based on unit cost data with INA-CBGs rates.
6) Identification of the determinants of the difference in rates based on unit cost and INA-CBGs rates, as well as efficiency efforts that can be made by the hospital in each activity of hemodialysis services.

IV. Results and Discussion

A. Unit Cost of Hemodialysis

TABLE I: Direct Cost of Hemodialysis Installation in 2021

NO	Description	Amount (RP)
1	Registration Fee	300.980.000
2	Employee Costs	
	Supervising Doctor	216.000.000
	DPJP	901.113.347
	Nurse	1.651.644.552
3	Cost of Materials & Consumables	6.286.003.394
4	Consumables Drug Costs	442.698.237
5	Laboratory Fees	388.538.000
	Total Direct Costs	10.187.007.530

Based on Table I, it is found that all direct costs for hemodialysis procedures at the Hemodialysis Installation at Hospital X during 2021 amount to Rp. 10.187.007.530,-.

TABLE II: Direct Resources Overhead Installation Hemodialysis in 2021

No	Description	Amount (RP)
1	Employee salary costs	-
2	Head of HD installation	39.000.000
3	Head of hemodialysis	30.000.000
4	Deputy head of HD room	18.000.000
5	Hemodialysis administration	70.656.000
6	Hemodialysis cleaning service	20.400.000
7	Hemodialysis security	20.400.000
8	Electricity costs	545.190.189
9	Telephone & internet charges	17.429.351
10	Water treatment costs	30.948.000
11	Stationery costs	41.193.642
12	Cost of non-medical consumables	9.034.623
13	Training costs	25.000.000
14	Depreciation expense	-
15	Building depreciation	49.930.744
16	Depreciation of non-medical devices	104.057.440
17	Medical device depreciation	133.130.899
18	Maintenance cost	-
19	Building maintenance costs	9.513.400
20	Maintenance costs for non-medical D	60.880.400
21	Maintenance costs for medical D	32.154.578
	Total	1.256.919.266

Apart from direct costs, there are indirect costs or overhead costs, which are routine costs and general costs that cannot be traced directly to hemodialysis procedures, such as indirect labor costs, costs for cleaning materials, ATK, general maintenance costs, and other costs. This overhead cost can be divided into Direct Resource Overhead and Indirect Resource Overhead costs.

Based on Table II, it is found that all Direct Resources Overhead costs or direct overhead costs for hemodialysis installations in the service of hemodialysis procedures at the Hemodialysis Installation at Hospital X during 2021 are Rp. 1,256,919,266, - .

Based on Table III, it is found that all Indirect Resource Overhead costs for hemodialysis installations in the service of hemodialysis procedures at the Hemodialysis Installation at Hospital X during 2021 are Rp. 2,514,847,587,-.

TABLE III: INDIRECT RESOURCE OVERHEAD COSTS HEMODIALYSIS INSTALLATION IN 2021

No	Description	Amount(Rp)	Pro-Porsi	Hemodialysis Installation (Rp)
1	Management & ADM Activity	30.431.833.528	4,33%	1.317.698.392
2	Logistic Activity	783.862.596	2,28%	17.872.067
3	CSSD Activity	1.509.544.206	3,87%	58.419.361
4	IPSRS Activity	1.301.069.825	1,33%	17.304.229
5	IPAL Activity	3.685.704.034	2,67%	98.408.298
6	SIMRS Activity	420.076.190	4,33%	18.189.299
7	Counter & Casemix Activity	5.323.274.453	4,33%	230.497.784
8	Pharmacy Activity	7.867.659.606	9,19%	723.037.918
9	Cleaning Service Activity	1.562.400.000	1,33%	20.779.920
10	Security Activity	950.400.000	1,33%	12.640.320
	Total	53.835.824.437		2.514.847.587

TABLE IV: TOTAL COST OF HEMODIALYSIS SERVICES

No	Fee type	Amount	Percentage
1	Direct Costs	10.187.007.530	73
2	Direct Resources Overhead Cost	1.256.919.266	9
3	Indirect Resources Overhead Cost	2.514.847.587	18
	Total	13.958.774.383	100

From Table IV, it is obtained that the total cost of hemodialysis services carried out by the X Hospital Hemodialysis Installation during 2021 is Rp. 13,958,774,383, -.

From these results, the unit cost calculation can be calculated as:

$$Unit\ Cost = \frac{Total\ Cost}{Number\ of\ Hemodialysis\ Visits}$$

$$Unit\ Cost = \frac{Rp.13{,}958{,}774{,}383{,}-}{15{,}049} = IDR\ 927{,}554.95$$

Based on (Ministry of Health of the Republic of Indonesia, 2016), the INA-CBGs rate for hemodialysis measures at class B regional I government hospitals is Rp. 879.100,-. This rate is lower than the results of calculating the unit cost at Hospital X using the ABC method, with a negative difference of Rp. 48,454.95 or 5.5% of the INA-CBGs rate for 1 hemodialysis action and Rp 729,198,542.55 for all hemodialysis actions during 2021.

This is in line with previous research (Mawaddah, 2019), which obtained the results of calculating the unit cost using the ABC method of Rp. 1.354.146,- for hemodialysis at Datu Beru Takengon General Hospital. This fee is also higher than the INA-CBGs tariff. Similar to the study of Azizan *et al*. (2020), who conducted an analysis of the costs and benefits of various schemes for hemodialysis services at Dr. Sitanala Tangerang with the results of calculating the unit cost of hemodialysis at Dr. Sitanala by way of self-management is Rp. 1.547.170,-. With KSO PT BB is Rp.1,000,189.- with KSO PT GIN IDR 1,089,760.-, and the KSO with PT FMC is IDR 1,014,415.-. The results of this calculation are also higher than the INA-CBGs rates.

The results of this unit cost calculation are also not in accordance with the current hospital rate, which is Rp. 800,000,- for each hemodialysis procedure. Hospital rates have a negative difference of Rp. 127,554.95 when compared with the results of calculating the unit cost using the ABC method.

The INA-CBGs payment system is a payment based on the tariff for grouping diagnoses that have clinical proximity and homogeneity of sources used by the hospital. Although based on the calculation of the unit cost of hemodialysis measures at Hospital X, it has a negative difference of Rp. 48,454.95 of the INA-CBGs tariff, the implementation of the INA-CBGs requires hospitals to carry out quality control and cost control so that hospitals can be more efficient in the cost of care provided to patients without reducing the quality of service. Thus, it does not cause harm to the hospital.

The current INA-CBGs rate is the rate based on the Ministry of Health no. 64 of 2016. The government needs to make adjustments to the INA-CBGs rates in line with the ongoing inflation process and rising prices of basic necessities and living costs.

Hospital X must also be wise in managing its finances with the INA-CBGs tariff pattern because it could result in calculating higher hospital rates due to activities that are not cost-effective or there are still actions that do not need to be performed on patients but take a portion the cost of the package is quite high. Through the determination of the INA-CBGs tariff pattern, it is expected to improve the quality and efficiency of hospitals. What needs to be emphasized is that hospitals cannot provide substandard services without maintaining service quality just because they want to reduce the costs required. Internal service quality from the point of view of the hospital as a producer, which is the suitability of services with predetermined standards, and external service quality from the patient's point of view as a consumer, which is a reference/standard of availability, characteristics, maintenance, and reliability (Ramadhan, 2015) must be continuously improved in process efficiency.

B. Statistical Analysis of Different Tests for Hemodialysis Rates based on Unit Cost and INA-CBGs Rates

Based on the results of data collection, there were 118 samples that met the inclusion and exclusion criteria for statistical tests in this study, which are presented in Table V.

TABLE V: SAMPLE DATA ON HEMODIALYSIS RATES FOR DECEMBER 2021

No	Hemodialysis costs (rp)	Number of samples
1	800.000 - 960.000	73
2	961.000 - 1.120.000	16
3	1.121.000 - 1.280.000	24
4	1.281.000 - 1.440.000	0
5	1.441.000 - 1.600.000	5
	Sample Totals	118

In this study, the Wilcoxon Signed Rank Test was conducted to test differences in hemodialysis rates based on unit cost and INA-CBGs rates at Hospital X.

The results of data analysis using the Wilcoxon Signed Rank Test on hemodialysis rates based on the unit cost at the

INA-CBGs rate are as follows:

TABLE VI: RESULTS OF TARIFF RANKS BASED ON UNIT COST AND TARIFF OF INA-CBG

		N	Mean Rank	Sum of Ranks
Unit Cost Tariff - INA-CBGs Tarif	Negative Ranks	0[a]	0.00	0.00
	Positive Ranks	118[b]	59.50	7021.00
	Ties	0[c]		
	Total	118		

a. Unit Cost Tariff < INA-CBGs Tariff.
b. Unit Cost Tariff > INA-CBGs Tariff.
c. Unit Cost Tariff = INA-CBGs Tariff.

Based on Table VI, there are more samples with positive ranks than samples with negative ranks. Thus, it can be concluded that the unit cost rate for hemodialysis is higher than the INA-CBG's rate.

TABLE VII: RESULTS OF THE WILCOXON SIGNED RANK TEST ON UNIT COST TARIFF AND INA-CBGS TARIFF

No	Unit Cost Tariff - INA-CBGs Tariff
Z	-9.728[a]
Asymp. Sig. (2-tailed)	0.000

a. Based on negative ranks.
b. Wilcoxon Signed Ranks Test

From Table VII, a p-value < 0.05 was obtained so that it can be statistically concluded that there is a significant difference between the hemodialysis rates based on the unit cost and the INA-CBGs rates.

C. Determinants of the Difference in Tariffs based on the Unit Cost and the INA-CBGs Tariff

The difference between hemodialysis rates based on unit cost calculations using the ABC method and INA-CBGs rates is due to differences in the way of calculating rates, where at rates based on unit costs using the ABC method, rates are obtained from calculating all costs incurred for hemodialysis services, both direct and indirect costs. Indirect costs are charged based on the activities of all supporting parts of the hemodialysis service at the hospital. Meanwhile, the INA-CBGs tariff is calculated based on costing data and disease coding data, which refers to the International Classification of Disease (ICD) established and compiled by WHO. Costing data is obtained from selected hospitals (sample hospitals) representing hospital class, type of hospital, and hospital ownership (private and government hospitals), including all cost data incurred by hospitals, coding data obtained from house coding data PPK Jamkesmas Hospital. For the preparation of JKN rates, costing data was used from 137 government and private hospitals, as well as 6 million data coding (cases) (Muhammad, 2019).

One of the determinants that causes the higher unit cost of hemodialysis at Hospital X is the high cost of employee salaries that must be charged for all activities at the hospital. This hospital has 1,297 employees (including 735 civil servants, 562 non-PNS). Based on the workload analysis carried out by the hospital, it was found that the need for employees was only 1142 employees, consisting of 62 medical staff, 648 nursing paramedical staff, 144 non-nursing paramedical staff, and 288 non-medical staff. When compared with the current staff, there is an excess number of human resources in Hospital X of 155 employees, or 13.57% of the calculation of employee needs based on workload analysis.

The doctor's fee policy, the amount of consumption of consumables, medicines, and supporting examinations is also a determinant of the difference in hospital rates and INA-CBGs rates, wherein the unit cost calculation everything is calculated in detail based on what is actually used by the patient, whereas in All INA-CBGs rates have been combined into one payment package.

Hospital policy regarding the limitations of services provided in hemodialysis measures can also affect the difference in hospital rates and INA-CBGs rates. To reduce the amount of costs incurred, the hospital issues several policies, such as using dialyzer reuse and setting laboratory examination schedules. With this policy, savings can be made while maintaining the quality of service to patients. The process of repeated dialyzer use for patients is proven to be safe, and the clearance characteristics of dialyzer reuse do not change if the dialyzer cleaning process is carried out correctly. Dialyzer reprocessing has traditionally been recognized to improve blood membrane biocompatibility and prevent first-use syndrome, along with considerable financial savings. The reprocessed dialyzer must have at least 80% of the original blood compartment volume measured and 80% urea (or ionic) clearance of the initial measured volume (Dhrolia *et al.*, 2017). Arrangement of laboratory examination schedules is also very necessary, where laboratory examinations are carried out according to patient needs, avoiding unnecessary examinations and scheduling for screening actions. Because if the screening action is carried out for each action, it will cause an increase in costs.

V. CONCLUSIONS, IMPLICATIONS, AND SUGGESTIONS

A. Conclusions

The unit cost of hemodialysis services at hospital X, which is calculated using the Activity-based Costing method, is Rp. 927,554.95. Meanwhile, the INA-CBGs rate for hemodialysis services is Rp. 879.100,-. So, the rate based on unit cost has a negative difference of Rp. 48,454.95 of the INA-CBGs rate. This can result in losses for the hospital, so the hospital must increase efficiency or increase cost-effectiveness.

From the statistical test, there was a significant difference between the unit cost hemodialysis service rates and the INA-CBGs rates.

The determinant of the difference in rates based on unit cost and INA-CBGs rates in hemodialysis services is the difference in the method of calculating rates, where at rates based on unit cost using the ABC method, rates are obtained from calculating all costs incurred for hemodialysis services, both direct and indirect costs. Meanwhile, the INA-CBGs tariff is calculated based on costing data and disease coding data, which refers to the International Classification of Disease (ICD) established and compiled by WHO. Other determinants are the amount of employee salary costs that must be charged to all activities in the hospital, the difference in doctor service rates, the amount of consumables used, medicines and supporting examinations, and hospital policy regarding limits on services provided in hemodialysis procedures, such as the use of dialyzer reuse and schedule laboratory examinations.

B. Implications

1) Theoretical Implications

Calculation of unit costs using the Activity-based Costing method can be used in calculating the unit cost of medical procedures in hospitals, including calculating the unit cost of hemodialysis procedures because this method produces more detailed and accurate calculations.

2) Managerial Implications

The unit cost calculation using the Activity-based Costing method has implications as a reference in determining the tariff for hemodialysis services at Hospital X. The current hospital rates are very low, even below the INA-CBGs rates, which can have an impact on the hospital's finances. Hospitals need to improve the current rates, which have never changed since 2013. Although the majority of patients undergoing hemodialysis at Hospital X are BPJS patients, an increase in rates still needs to be done. This rate also applies to general patients and other insurances, so it can be used as material for hospital negotiations with third parties who will work with the hospital or even can be used as material for proposals for changes to BPJS rates.

With the difference in rates based on unit costs and the applicable INA-CBGs rates, hospitals must make efficiency so that their unit costs do not exceed the INA-CBGs rates. However, the government also needs to revise the INA-CBGs tariffs, adjusting to inflation that occurs, increases in prices of basic necessities and costs of living, as well as policy changes that occur.

The determinants of the difference in rates based on unit cost and INA-CBGs rates for hemodialysis services are differences in the method of calculating rates, employee salary costs, differences in doctor service rates, the amount of consumables used, medicines and supporting examinations as well as hospital policies regarding the limits of services provided in hemodialysis. Hospitals must carry out efficiency by considering all of these determinants but still have to maintain the quality or quality of service. Among them are reducing employees according to workload analysis, adjusting doctor service rates, advising patients to control the polyclinic to get routine medicines consumed by patients, making policies for arranging laboratory examination schedules and patient screening, and implementing policies on the use of dialyzers reuse.

C. Suggestions

Some suggestions that can be conveyed from the results of this study are as follows:

1) One method that is expected to provide efficiency in hemodialysis services in hospitals is to use dialyzer reuse because it can reduce the cost of purchasing dialyzers. However, the effectiveness and quality control of patient care must be considered. Therefore, it is suggested to conduct research on calculating the unit cost of hemodialysis measures with the policy of using dialyzer reuse, comparison with the use of disposable dialyzers, and the effectiveness and quality control of hemodialysis patient care.
2) Hospitals are advised to calculate the unit cost of other services at the hospital using the Activity-based Costing method in order to obtain more detailed and accurate calculation results.

ACKNOWLEDGMENT

The author expresses his highest appreciation and thanks to Dr. Yanuar Ramadhan, SE, MM Ak, and Dr. M. Natsir Nugroho, MMR, SpOG as supervisor, and Dr. Rokiah Kusumapradja, SKM., MHA Head of the Department of Hospital Administration Masters study program at Esa Unggul University Jakarta, who has provided a lot of support, assistance and motivation since lectures began until the writing of this thesis.

REFERENCES

Azizan, N., Sutoto, S., & Maryam, M. S. (2020). Analisis biaya dan manfaat berbagai skema untuk pelayanan hemodalisi di Rumah Sakit dr. Sitanala Tangerang [Analysis of the costs and benefits of various schemes for hemodialysis services at Dr. Sitanala Tangerang Hospital]. *Jurnal Riset Bisnis*, *4*(1), 39–48.

Blocher, E., Stout, D., & Cokins, G. (2019). *Cost management: A strategic emphasis.* McGraw-Hill/Irwin.

Dhrolia, M. F., Imtiaz, S., Qureshi, R., & Ahmed, A. (2017). Reusing dialyzer in low income countries: A good cost saving tactic with complex ethics. *Journal of the Pakistan Medical Association*, *67*(8), 1254–1257.

Doru, I. (2018). Analisis perbandingan tarif berdasarkan biaya satuan (unit cost), tarif INA-CBG's dan tarif rumah sakit pada instalasi rawat inap rsud kabupaten Pasangkayu [Comparative analysis of tariffs based on unit costs, INA-CBG's tariffs and hospital tariffs at the inpatient installation of the Pasangkayu district hospital] (Unpublished master's thesis). Hasanuddin University.

Drury, C. (2018). *Management and cost accounting* (10th ed.). Cengage Learning.

Franklin, M., Graybeal, P., & Cooper, D. (2019). Principles of accounting, Volume 2: Managerial accounting. OpenStax.

Ganiyu, I. A. (2018). Cost classification, overhead costs allocation and apportionment. In *Cost and management accounting fundamentals: Management accounting 1*. CreateSpace Independent Publishing Platform.

Hall, J. E., & Hall, M. E. (2020). *Guyton and Hall textbook of medical physiology* (14th ed.). Elsevier.

Hansen, D. R., & Mowen, M. M. (2017). *Cost management: Accounting and control* (5th ed.). Thomson South-Western.

Levy, J., Brown, E., & Lawrence, A. (2016). *Oxford handbook of dialysis* (4th ed.). Oxford University Press.

Mawaddah, M. (2019). *Analisis perbandingan tarif rumah sakit dan tarif Indonesia case based group pada pelayanan hemodialisa di rumah Sakit Umum Datu Beru Takengon Tahun 2017* [Comparative analysis of hospital rates and Indonesian case based group rates for hemodialysis services at Datu Beru Takengon General Hospital in 2017] (Unpublished master's thesis). University of Sumatera Utara.

Ministry of Health of the Republic of Indonesia. (2016). *Peraturan Menteri Kesehatan Republik Indonesia Nomor 52 Tahun 2016 Tentang Standar Tarif Pelayanan Kesehatan Dalam Penyelenggaraan Program Jaminan Kesehatan* [Regulation of the Minister of Health of the Republic of Indonesia Number 52 of 2016 concerning Health Service Tariff Standards in the implementation of the Health Insurance Program]. http://hukor.kemkes.go.id/uploads/produk_hukum/PMK_No._52_Tahun_2016_Tentang_Standar_Tarif_Pelayanan_Kesehatan_Dalam_Penyelenggaraan_JKN_.pdf.

Mitra, P. K., & Ell, M. S. (2020). Chronische Niereninsuffizienz [Chronic kidney disease]. *Praxis*, *97*(17).

Muhammad, F. (2019). *Perhitungan unit cost pasien BPJS rawat jalan diagnosis hipertensi tahun 2019 di Rumah Sakit Harapan Keluarga Mataram* [Calculation of unit costs for outpatient BPJS patients diagnosed with hypertension in 2019 at Harapan Keluarga Hospital, Mataram] (Unpublished master's thesis). University of Esa Unggul.

Nugraha, I. R. K., Sewu, P. L. S., & Siarif, T. J. (2017). Kompetensi sumber daya manusia dalam penyelenggaraan hemodialisi di rumah sakit dihubungkan dengan asas perlindungan hukum [The competency of

human resources in administering hemodialysis in hospitals is linked to the principle of legal protection]. *Soepra*, *2*(1), 91-103.

Ramadhan, Y. (2015). The effects of process quality management and information technology to product quality performance with management accounting system as intervening (A case study of manufacture companies listed on Indonesia Stock Exchange). *JOURNAL*, *6*(6), 161–173.

St-Hilaire, C., & Crépeau, P. K. (2000). Méthode de répartition des coûts unitaires et des coûts hospitaliers [Unit cost and hospital cost allocation method]. *Healthcare Management Forum*, *13*(2), 12–24.

Walther, L. M., & Skousen, C. J. (2010). *Managerial and cost accounting*. Ventus Publishing.