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Cost Of Illness Of Chronic Kidney Disease Patients With Hemodialysis In Hospital In Yogyakarta Indonesia

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Cost of Illness for Chronic Kidney Disease Treatment with Hemodialysis in a Public Hospitals in Yogyakarta

Dr. apt. Ingenida Hadning, M.Sc., Hendrawan

OUTLINE

1. Introduction
2. Research Objectives
3. Research Methods
4. Results
5. Conclusions

INTRODUCTION

RESEARCH OBJECTIVES

- To determine the cost of illness of chronic kidney disease patients undergoing hemodialysis, including direct medical costs; direct non-medical cost; and indirect costs
- To find out the comparison of real costs with INA-CBG's rates

RESEARCH METHODS

- Societal
- Cross sectional
- Observational, non experimental

POPULATION AND SAMPLE

The Inclusion Criteria
- Chronic kidney disease patients undergoing hemodialysis at a public hospital in Yogyakarta
- At least 18 years of age
- Male and female
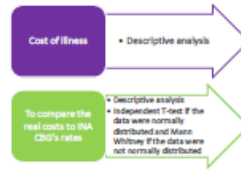- Able to communicate well
- Willing to be a respondent

The Exclusion Criteria
- Respondents who didn't fill out the questionnaire completely
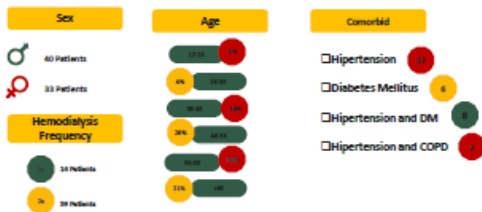- Incomplete medical and financial record data

Research Instrument
- Medical record
- Questionnaires
- Financial record

Data Analysis

Cost of Illness → • Descriptive analysis

To compare the real costs to INA CBG's rates →
- Descriptive analysis
- Independent T-test if the data were normally distributed and Mann Whitney if the data were not normally distributed

Characteristics of Patients

Sex
- ♂ 40 Patients
- ♀ 33 Patients

Hemodialysis Frequency
- 2x 14 Patients
- 3x 59 Patients

Age
(chart)

Comorbid
- ☐ Hipertension
- ☐ Diabetes Mellitus
- ☐ Hipertension and DM
- ☐ Hipertension and COPD

Cost of Illness

Frequency	n	Total of DMC (IDR)	Total of DnMC (IDR)	Total of FC (IDR)	Total of COI (IDR)
1x	14	55.014.059	1.468.000	0	56.482.059
2x	59	451.455.814	10.856.000	0	462.311.814
Total cost of illness of hemodialysis	73	506.469.873	12.324.000	0	518.793.873
Average of cost of illness ± Std. Dev		253.234.936,50± 280.326.653,31	6.102.000,00± 6.723.171,28	0 ± 0	259.336.936,50± 286.964.971,77

Direct Medical Cost

Type of DMC	n	Average of DMC Cost (Hemodialysis Frequency1x)	%	n	Average of DMC Cost (Hemodialysis Frequency2x)	%
Hemodialysis	4	3.340.000	85	8	6.680.000	87,4
Laboratory	1	30.857,14± 23.867,77	0,8	1	61.932,20± 116.455,68	0,8
Medicine	1	406.718,50± 268.996,49	10,4	1	605.861,25± 269.568,50	7,9
Services	1	100.000	2,5		200.000	2,6
Registration	1	12.000	0,3		24.000	0,3
Intermediatecare	1	40.000	1		80.000	1
Total		3.929.575,64	100		7.651.793,45	100

Direct Nonmedical Cost

Hemodialysis Frequency (per week)	Total of Patient	Average of Transportation Cost	%	Average of Meal Cost	%	Total of Cost
1x	14	48.571,43± 17.032,61	46	56.285,71 ± 32.285,81	54	104.857,14
2x	59	83.932,20± 96.690,72	46	100.067,80 ± 96.440,06	54	184.000

5

The Comparison of Real Costs with INA-CBG's Rates

INA CBG's Code	Total of Patient	Cost Average (IDR)	INA CBG's Rate (IDR)	P Value
N-3-15-0	73	1.053.596	879.100	0,000

CONCLUSION

1. The average cost of illness for CKD patients with hemodialysis for a month treatment in a public hospital was 259.336.936,50 IDR. The cost component was dominated by direct medical costs.

2. The average real cost of CKD patients with hemodialysis in a public hospital was 1.053.596 IDR for one procedure, which was significantly higher than the INA-CBG's rates.

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Cost of Illness of Chronic Kidney Disease Patients with Hemodialysis in Hospital in Yogyakarta Indonesia

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ABSTRACT

Chronic kidney failure has the number of patients increasing year to year, both globally and in Indonesia. Financing from chronic kidney failure is the second largest after heart disease. With an increase in the number of sufferers and the expensive care, of course, the economic burden is borne also increases. This study aims to determine the cost of illness of chronic kidney failure patients undergoing hemodialysis in type C private hospitals and type B government hospitals. These costs include direct medical, direct non-medical, and indirect costs to compare the real costs with INA-CBG's. The cost of illness method is used in this pharmacoeconomic study from a societal perspective, with a non-experimental observational research design and a cross-sectional approach. Prospective data collection, namely from medical record data, bill data, and interviews with patients. Calculation of the number of samples using the Slovin formula. A total of 97 people in a private type C hospital and 73 people in a type B government hospital met the inclusion criteria. Complete data were processed and analyzed statistically with an independent t-test for normal data and Mann Whitney test for abnormal data. The results showed that the total cost of illness in one month for 97 patients in type C private hospital was 611.103.400 IDR, while for 73 patients in type B government hospital was 518.793.873 IDR. There is also a significant difference between the average real cost and the INA-CBG's rates, with a p-value of 0,000. The difference between the two is 15.429.100 IDR for type C private hospital and 12.738.270 IDR for type B government hospital in one month, respectively, with INA-CBG's rates being lower than real costs.

Keywords: Chronic Kidney Failure, Hemodialysis, Cost of IIIlness, INA-CBGs

INTRODUCTION

Chronic disease is a pathophysiological course with various causes. Usually, a clinical event characterized by a continuous and irreversible decline in kidney function is named chronic kidney failure. Therapy to replace kidney function needed, both in the form of dialysis and kidney transplantation(1). With an ever-increasing population, a poor prognosis, and expensive costs, this disease is a global public health problem. According to the World Health Organization's 2015 Global Burden of Disease report, 1.2 million individuals died from chronic kidney disease in 2015, a 32% increase from 2005. People with end-stage kidney disease are estimated to have increased from 2,3 to 7,1 million died, due to a lack of access to treatment in 2010 (2).

Based on the opinion of a systematic review and meta-analysis by Hill et al. (2016), 13,4% of people worldwide have chronic kidney failure(3). Hemodialysis is the most widely used therapy but requires costly. In addition, the indirect costs incurred are also uneconomical because they are related to the duration and frequency of treatment (4).

The Indonesian Case-Based Group or INA-CBG's is the amount of financing by BPJS Health to Advanced Level Referral Health Facilities for the service of healthy, based on the grouping of disease diagnoses and procedures (5). According to Fauziah's research (2015), the real cost for patients with chronic kidney failure is greater than the INA-CBG's rates. (6) The researchers examine the cost of the chronic kidney failure that will be paid by the patient. In addition, the number of fees that need to be a concern for medical staff.

This study was conducted in 2 government and private hospitals with different types, which are type B and C, with the aim of comparing the real cost of hemodialysis in patients with chronic kidney disease in hospitals with different ownership and types. Aside from that, it will be known the comparison of real costs with varied INA-CBG's rates between the two hospitals, that have different ownership and types. So, this research aims to knowing the cost of illness for patients with chronic kidney disease who are having hemodialysis and the comparison between the real cost of hemodialysis by the hospital and the cost of hemodialysis by the government.

METHODS

This research is pharmacoeconomic research from a societal perspective. This study uses the cost of illness method with a non-experimental observational research design with a cross-sectional approach. The data collection manages prospectively. The instruments used in this research are medical record, hospital billing statement and questionnaire sheet for cost of illness. The cost of illness questionnaire used in this research contains components such as direct medical costs, direct non-medical costs and indirect costs, so it does not require validity and reliability tests.

The population of this study were all patients with chronic kidney failure who received hemodialysis at a private type C hospital and a government type B hospital in Yogyakarta. All patients with chronic renal failure having hemodialysis in a hospital who met the inclusion and exclusion criteria were included as sample in this study. Inclusion criteria include chronic kidney failure patients undergoing hemodialysis in type C private hospitals and type B government hospitals in Yogyakarta, minimum age 18 years, male or female gender, capable to communicate well and willing to participate as a respondent. Exclusion criteria include did not finish the questionnaire entirely, incomplete medical record information and financial information. Calculation of the sample in this study using the Slovin formula.

Cost of illness data analysis used descriptive or univariate statistics. Include direct medical costs, direct non-medical costs, and indirect costs when calculating the average cost of illness. Descriptive statistical analysis was utilized to calculate the average direct medical cost from the data analysis of the comparison of hospital real cost with INA CBG's rates. Followed by bivariate analysis, which uses the Independent Test if the data is normally distributed and the Mann Whitney Test if it is not normally distributed, to compare the two costs mentioned above. The association between the average direct medical cost and the rate of the INA CBG will be calculated, resulting a significance value (p-value). The p-value

criteria is identified using the sig value. If the p-value is >0,005, there is no significant relationship between the two variables. The correlation between the two variables is significant if the p-value is <0,005.

This research has been declared ethically acceptable by the Health Research Ethics Committee, Faculty of Medicine and Health Sciences, University of Muhammadiyah Yogyakarta.

RESULTS

1. Patient Characteristic

This research is in the hemodialysis unit of a private type C hospital and a type B government hospital in Yogyakarta. Whole 97 respondents in type C private hospital and 73 respondents in type B government hospital met the inclusion criteria. Patient characteristics data were obtained through direct interviews with patients, plus medical record data patients such as gender, age, comorbidities, and hemodialysis frequency.

Table I. Patient Characteristics

Characteristics	Private Hospital		Government Hospital	
	number of patients (n = 97)	percent-age (%)	number of patients (n =73)	Percent-age (%)
Gender				
Male	67	67,69	40	55
Female	30	30,31	33	45
Age (years)				
17-25	2	2,00	1	1
26-35	3	3,00	3	4
36-45	18	18,19	13	18
46-55	33	33,34	19	26
56-65	29	29,30	22	30
>65	12	12,12	15	21
Comorbid				
One Comorbid	91	93,81	65	89
Two Comorbid	6	6,19	8	11
Frequency HD				
1x a week	5	5,15	14	19,17
2x a week	91	91,94	59	80,83
3x a week	1	1,03		

According to the findings of this study, males are more likely than females to suffer from chronic kidney disease. This is consistent with prior studies, which found a significant relationship between male and female gender and the high frequency of chronic kidney disease, particularly among individuals getting hemodialysis. It is said

that males have a risk 2 times greater than females due to differences in lifestyle such as smoking and self-care(7).

Based on age characteristics in both hospitals, patients aged between 46-55 years had the largest number, followed by patients aged 56-65 years. This is similar to previous research which

showed that most respondents were patients aged 49 years and proved that the prevalence of kidney disease increases with age (8).

In this study, it can be seen that the highest proportion are patients with one comorbid. The highest comorbidity was hypertension with 46 patients (46,8%) in type C private hospitals and 57 patients (78%) in type B government hospitals. KDIGO (2013) states that there is a strong relationship between chronic kidney disease and high blood pressure, both of which can exacerbate each other. High blood pressure can cause damage to blood vessels. As a result, the blood supply to vital organs such as the kidneys is reduced (9). Another disease that accompanies chronic kidney disease is diabetes mellitus. According to the Henry Ford Health System, diabetes mellitus has accounted for more than 50% of End-stage Renal Disease (ESRD) in America.

The results in this study showed that the largest number were patients with hemodialysis frequency twice per week, followed by patients with hemodialysis frequency once per week.

This is in accordance with previous studies which showed that most respondents did hemodialysis twice a week and only some patients did hemodialysis 3 times a week or about 7% of the sample due to the severity of chronic kidney failure which was more serious (10). In addition, the frequency of hemodialysis is also influenced by the patient's physiological condition and the doctor's considerations.

2. Cost of Illness (COI)

There are three different types of costs associated with illness: direct medical costs, direct non-medical costs, and indirect costs. Direct medical costs, such as hemodialysis rates, laboratory test costs, prescription costs, medical supply costs, and surgical services, are directly related to the patient's medical demands. Direct non-medical costs, on the other hand, include food costs and transportation costs that are not directly connected to medical need. Indirect costs, such as compensation reductions or decreased income, are a result of lost productivity because of maintenance. The following are the results of the cost of illness in one month in Table 2.

Table II.   Total Cost of Illness

HD Frequency	n	Total DMC (IDR)	Total DnMC (IDR)	Total IC (IDR)	Total COI (IDR)
Private Hospital					
1x	5	15.782.700	280.000	360.000	16.422.700
2x	91	560.637.700	24.032.000	800.000	585.469.700
3x	1	9.091.000	120.000	0	9.211.000
Total cost of illness	97	585.511.400	24.432.000	1.160.000	611.103.400
Average		195.170.466 ± 316.521.592	8.144.000 ± 13.759.644	386.666 ± 400.666	203.701.133 ± 330.6400.939
Government Hospital					
1x	14	55.014.059	1.468.000	0	56.482.059

2x	59	451.455.814	10.856.000	0	462.311.814
3x	-	-	-	-	-
Total cost of illness	73	506.469.873	12.324.000	0	518.793.873
Average		253.234.936,50 ± 280.326.653,31	6.102.000,00 ± 6.723.171,28	0 ± 0	259.336.936,50 ± 286.964.971,77

The total cost of illness in patients with chronic kidney failure on hemodialysis in type C private hospitals is 611.103.400 IDR, whereas in type B government hospitals it is 518.793.873 IDR. It is also known that direct medical costs are the largest cost component with a total of 585.511.400 IDR and 506.469.873 IDR respectively. The greater the cost of illness in chronic kidney failure patients undergoing hemodialysis at a type C private hospital compared to a type B government hospital because the number of patients analyzed at the two hospitals is different, the direct medical cost component is different, and there is no indirect cost component in the hospital. Most of the patients in type B government hospitals are known to be unemployed, while patients who are still working still get relief from the work policy so that there is no salary reduction.

This finding is consistent with prior study, which found that direct medical costs are the most expensive component, followed by direct non-medical costs and indirect costs. This is due to the fact that the computed direct medical costs comprise an amount of components, including hemodialysis charges.(10)

3. Cost of Illness (COI)

This component measures the possible costs of the resources used for diseases, such as the cost of hemodialysis, laboratory tests, drugs, medical consumables, treatment services, and medical expenses outside of insurance. Based on table 3. The average total direct medical cost for 5 patients at a private type C hospital with a frequency of once per week in one month was 3.156.540 IDR. As for 91 patients with a frequency of twice per week, it was 6.160.853 IDR, while in 1 patient with a frequency of three times per week, it was 9.091.000 IDR. In 14 patients in type B government hospitals with a frequency of once per week, the average total direct medical cost was 3.929.575,64 IDR, while for 59 patients with a frequency of twice per week, it was 7.651.793,45 IDR.

The components above state that the most cost on direct medical costs in type C private hospital is hemodialysis costs of 92,6%, 94,9%, and 96,5% of the total direct medical costs in patients with a one-time, two times, and three times frequency per week. In type B government hospital, hemodialysis costs were 85% and 87,4%, respectively, in patients with a frequency of once and twice per week.

From the data below, it can be seen that hemodialysis is the biggest cost in the direct medical cost component. This is due to the large number of hemodialysis frequencies in a month compared to laboratory tests that are carried out at least once every six months, except for the hemoglobin test which is conducted once a month. Laboratory costs will be high when patients take laboratory tests outside of the set schedule, such as when a doctor requests that blood sugar levels and serum creatinine be tested. Meanwhile, medicines are given based on different patient conditions. Previous studies have shown that in patients with a frequency of 1 time a week, 2 times a week or 3 times a week the cost of hemodialysis is the largest cost component in direct medical costs.(6)

Table III. Component of Direct Medical Cost

DMC Component	n	Average (1x a week)	%	n	Average (2x a week)	%	n	Average (3x a week)	%
Private Hospital									
Cost of HD	4	2.924.000	92,6	8	5.848.000	94,9	12	8.772.000	96,5
Laboratory	1	198.800 ± 185.567	6,3	1	149.861 ± 196.087	2,5	1	244.000	2,7
Drugs	1	33.740 ± 46.594	1,1	1	162.992 ± 122.308	2,6	1	75.000	0,8
Total		**3.156.540**	**100**		**6.160.853**	**100**		**9.091.000**	**100**
Government Hospital									
Cost of HD	4	3.340.000	85	8	6.680.000	87,4		-	-
Laboratory	1	30.857,14 ± 23.867,77	0,8	1	61.932,20 ± 116.455,68	0,8		-	-
Drugs	1	406.718,50 ± 268.996,49	10,4	1	605.861,25 ± 269.568,50	7,9		-	-
Services	1	100.000	2,5	1	200.000	2,6		-	-
Registration	1	12.000	0,3	8	24.000	0,3		-	-
Intermediate care	1	40.000	1	1	80.000	1		-	-
Total		**3.929.575,64**	**100**		**7.651.793,45**	**100**		**-**	**-**

4. Direct Non-Medical Cost (DnMC)

This component measures costs for families or patients to eat, transport to healthcare facilities, and other non-healthcare related costs. Based on table 4, the average total direct non-medical cost such as transportation costs and food costs in a private type C hospital for 5 patients with a frequency of once per week in one month is 56.000 IDR, 91 patients with a frequency of twice per week are 264.087 IDR, and 1 patient with a frequency of three times per week is 120.000 IDR. The average total direct non-medical cost in a type B government hospital was 104.857,1 IDR for 14 patients with a frequency of once per week and 184.000 IDR for 59 patients with a frequency of twice per week.

Table IV. Component of Direct Non-medical Costs

Frequency	Number of Patient	Average cost of transportation (IDR)	%	Average cost of meals (IDR)	%	Total (IDR)
Private Hospital						
1x	5	32.000 ± 17.888	21,1	24.000 ± 53.665	78,9	56.000
2x	91	134.769 ± 270.983	51	129.318 ± 164.929	49	264.087
3x	1	120.000 ± 0	100	0	0	120.000
Government Hospital						
1x	14	48.571,43 ± 17.032,61	46	56.285,71 ± 32.285,81	54	104.857,1
2x	59	83.932,20 ± 98.690,72	46	100.067,80 ± 96.440,06	54	184.000
3x	-	-	-	-	-	-

In one month, patients receiving hemodialysis either once, twice, and three times a week at a private type C hospital spent more on transportation than meal costs. Meanwhile, patients that do hemodialysis once and twice a week in type B government hospitals incur meal costs greater than transportation costs as can be seen in the table 4. Meal expenses varied by patient due to a variety of factors such as lifestyle variances. The majority of patients and their families purchased meals while waiting for medical treatment, however some patients and their families brought home food.

Patients' transportation costs vary due to variances in transportation modalities and the distance traveled from their home to the hospital. Various means of transportation used such as bicycles, motorbikes, ambulance, and privately owned cars. There are also people that use online transportation as a mode of transportation. This is consistent with Tania and Thabrany's (2015) study, which found that the average transportation costs incurred by patients in both class B and C hospitals were higher than the average cost of meals to be paid

by patients. The difference is in patients who have hemodialysis once a week and have a higher percentage of the average cost of a meal. This is because the meal costs more than the transportation costs each time the action is taken[10]

5. Indirect Cost

The cost of lost productivity due to morbidity or mortality is measured as indirect costs. This study contains a reduction in the patient's income or salary per month, based on table 5.

Table V. Component of Indirect Costs

Frequency HD	n	Number of Patient	Average income reduction (IDR)	%
Private Hospital				
1x	4	5	72.000 ± 160.996	89,1
2x	8	91	8.791 ± 83.862	10,9
3x	12	1	0	0
Total			80.791	100

The patient's income is reduced based on how frequently hemodialysis is performed throughout a month. The more frequently a patient

leaves work, the smaller the patient's income. Components of indirect costs were undetected in study at type B government hospitals since the majority of patients did not work. The average reduction in income for patients in private type C hospitals with a frequency of once and twice per week was 89,1% and 10,9%, respectively, while patients with a hemodialysis three times a week did not receive a reduction in income.

The chronic kidney failure can affect the condition of the patient's work status. Most patients with chronic kidney failure decided to stop working. However, some patients still maintain their work status. So they can adjust the balance between work and treatment or therapy. The effect of job loss is the reduced strength of body condition and psychosocial function due to the impact of adjustment to chronic kidney failure. (11)

According to previous research, the majority of respondents no longer work due to unproductive age and limited activities due to the patient's health condition. Some respondents stated that they had difficulty with work-time flexibility and thus decided to quit their jobs.(10) Similarly, for hemodialysis patients at type C private hospital in this study who have comparable conditions, the consequence of the lost productivity burden, or in this case, the cost of reduced income, can only be noticed in patients with fixed income who do not receive permission relief from where he works.

6. Real Cost and INA-CBG's Tariff Comparison

The INA-CBG charges 825.500 IDR for dialysis procedures in type C private hospitals and 879.100 IDR in type B government hospitals.

Table VI. Tariff Comparison Between Real Costs and INA-CBG's

CBG's INA code	Number of Patient	Average of Real Costs (IDR)	INA CBG's Rates (IDR)	p value
Private Hospital				
N-3-15-0	97	984.562	825,500	0,000
Government Hospital				
N-3-15-0	73	1.053.596,10	879,100	0,000

In this study to discover the difference between real cost and INA-CBG's rates, it is necessary to use SPSS for statistical tests. The data obtained in private type C hospitals were tested for normality by Kolmogorov Smirnov (sample >50) with a value of 0,059, which means the data is normally distributed. Next, perform an independent t-test analysis, which shows a p-value of 0,000 (p <0,005). It means that the real cost have significantly

different from the INA CBG's rates in type C private hospitals

The Kolmogorov Smirnov normality test (sample > 50) in type B government hospitals resulted in a p-value of 0.000. It means the data was not normally distributed (p < 0,005). Furthermore, Mann Whitney analysis was used based on the hypothesis that if the p-value <0,05, the hypothesis was accepted, and if the p value >0,005, the

hypothesis was rejected. The results showed a p-value of 0,000 (<0,005). Thus, there is a significant difference between the real cost of government hospitals and INA-CBG's rates.

In both hospitals, the average of real cost in chronic kidney failure patients having hemodialysis is higher than the INA-CBG rates that has been set. The difference in costs in one month at a private type C hospital from the INA-CBG's rates for 97 patients, which has a total value of 80.073.500 IDR, which is smaller than the real cost with a total of 95.502.600 IDR. So in one month, there has been a loss of around 15.429.100 IDR.

In type B government hospitals, the total loss in one month is 12.738.270 IDR. Because the total INA-CBG's tariff in one month is 64.174.300 IDR, smaller than the real cost of 76.912.570. IDR. Influential factors include the cost of medications that differ between patients and the cost of laboratory tests that are adapted to the patient's comorbid disease.

DISCUSSION

These study results are similar to the findings of Azalea et al (2016), who discovered that when real hospital costs and INA CBG rates are compared, certain groups of chronic renal disease patients on hemodialysis show significant variances, which are impacted by the amount of medical costs as well as the hemodialysis frequency. (8) Other studies also show the difference between direct medical costs and standard INA-CBGs rates accounts for 46.84% of total hospital costs in patients with chronic kidney disease undergoing

hemodialysis in type B government hospital. (12) The similarities between the findings of this study and earlier studies are due to the different requirements of each patient. Patients may require additional laboratory tests outside of the schedule, as well as the administration of additional medications, to manage complications and side effects of hemodialysis. This is what raises the patient's real cost over the INA-CBG's tariff, potentially increasing the patient's cost burden.

The findings of this study can be used as a reference by policymakers in the future when developing policies to examine the use of medications that were not previously covered but have benefits and are frequently used by patients, in the intention of relieving the burden of costs that patients must incur. The amount of medication costs incurred is due to hemodialysis patients experiencing complications or side effects from hemodialysis therapy, requiring additional drugs. A limitation of this research is the lack of information obtained due to the non-specificity of patient billing sheets on the details of medication costs, laboratory expenses, and other cost components.

CONCLUSION

The total cost of illness in one month includes direct medical costs, direct nonmedical costs, and indirect costs for 97 chronic kidney failure patients undergoing hemodialysis in a type C private hospital is 611.103.400 IDR, while for 73 patients in a type B government hospital is 518.793.873 IDR. Direct medical costs are the largest component. Comparison of the average real cost with INA-

CBG's rates in the two hospitals has a significant difference with a p-value of 0,000, where INA-CBG's rates are lower than real cost. The cost difference in type C private hospitals is 15.429.100 IDR in one month, while in type B government hospitals, the difference in costs is 12.738.270 IDR.

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REFERENCES

1. Zasra R, Harun H, Azmi S. Indikasi dan Persiapan Hemodialis Pada Penyakit Ginjal Kronis. J Kesehat Andalas. 2018;7(Supplement 2):183.

2. Luyckx VA, Tonelli M, Stanifer JW. The global burden of kidney disease and the sustainable development goals. Bull World Health Organ. 2018;96(6):414-422C.

3. Hill NR, Fatoba ST, Oke JL, Hirst JA, O'Callaghan CA, Lasserson DS, et al. Global Prevalence of Chronic Kidney Disease – A Systematic Review and Meta-Analysis. CKD Glob Prevalance. 2016;

4. Kaitelidou D, Ziroyanis PN, Maniadakis N, Liaropoulos LL. Economic evaluation of hemodialysis: Implications for technology assessment in Greece. Int J Technol Assess Health Care. 2005;21(1):40–6.

5. Kementrian Kesehatan Republik Indonesia. Pedoman Penerapan Kajian Farmakoekonomi. Jakarta: Kementrian Kesehatan Republik Indonesia; 2016. 6 p.

6. Fauziah, Wahyono D, Budiarti LE. Cost of Illness Dari Chronic Kidney Disease dengan Tindakan Hemodialisis. J Manaj dan Pelayanan Farm. 2015;5(3):149–58.

7. Pranandari R, Supadmi W. Faktor Risiko Gagal Ginjal Kronik di Unit Hemodialisis RSUD Wates Kulon Progo. Maj Farm. 2015;11(2):316–20.

8. Azalea M, Andayani TM. Analisis Biaya Pengobatan Penyakit Ginjal Kronis Rawat Inap dengan Hemodialisis di Rumah Sakit. 2016;141–50.

9. Levin A, Stevens PE, Bilous RW, Coresh J, De Francisco ALM, De Jong PE, et al. Kidney disease: Improving global outcomes (KDIGO) CKD work group. KDIGO 2012 clinical practice guideline for the evaluation and management of chronic kidney disease. Kidney Int Suppl. 2013;3(1):1–150.

10. Tania F, Thabrany H. Biaya dan

Outcome Hemodialisis di Rumah Sakit Kelas B dan C. J Ekon Kesehat Indones. 2017;1(1).

11.   Priyanti D. Perbedaan Kualitas Hidup Pasien Gagal Ginjal Yang Bekerja Dan Tidak Bekerja Yang Menjalani Hemodialisis Di Yayasan Ginjal Diatrans Indonesia. Inquiry. 2016;7(1):231155.

12.   Tandah MR, Ihwan I, Diana K, Zulfiah Z, Ambianti N. Analisis Biaya Pengobatan Penyakit Ginjal Kronik Rawat Inap Dengan Hemodialisis Di Rumah Sakit Umum Daerah Undata Palu. Link. 2019;15(2):1–7.