



Cost of Illness Patients with Hemophilia in RSUP Dr. Sardjito Yogyakarta

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ABSTRACT

Hemophilia is a catastrophic disease, that is costly, complications can be life-threatening and requires long treatment time range. In the study of cost of illness was measured economic burden of disease on society. This study aims to determine the cost of Hemophilia based on the hospital perspective, to know the difference between the cost of illness patients with hemophilia A and hemophilia B, to investigate the effect of the inhibitor on the cost of illness, to know the difference between the rate of hospital and the rate of INA-CBG's package. This study is an analytical study of non-experimental. The data were obtained retrospectively from the medical records of patients with hemophilia during the period September 2014 - August 2015 and the finance department at RSUP Dr. Sardjito. This study is conducted based on the hospital perspective with prevalence approach. Descriptive analysis is used to describe a large total cost of Hemophilia, the components that make up the cost and the largest contribution to the cost of Hemophilia. Independent-samples t-test used to determine the difference between the cost of disease hemophilia A and hemophilia B and the statistical test of one sample t-test is performed to determine the difference between the real cost of hemophilia patients with INA-CBG's rates. Estimates of the cost of outpatient for one year in patients with hemophilia A with no inhibitor is Rp 213,033,935.85 ± 116,829,978.92, mild hemophilia A with inhibitors 57.6 BU is Rp 443,233,667.00, severe hemophilia A with inhibitors 23.36 BU is Rp 348,179,400.00 and hemophilia B without inhibitor is Rp. 513,489,154.46 ± 235,925,885.89. The average cost of Hemophilia each episode of hospitalization is Rp. 34,674,023.32 ± 26,169,586.84. Estimated total cost of hemophilia for one year period September 2014 - August 2015 is Rp. 12,187,338,298.00. The results of independent-samples t-test, there is significant differences between the cost of Hemophilia A and Hemophilia B without inhibitor in outpatients, with p-value of 0.000. The cost of Hemophilia B is higher than the cost of hemophilia A disease. The cost of hemophilia A disease is higher in patient with inhibitor than without inhibitor. Outpatient hospital there are some rates greater than rates INA-CBGs. While in hospitalization, the average rate for each episode of hospital care is higher than the rate INA-CBGs.

Keywords: Cost of illness, hospital perspective, hemophilia, inhibitor, INA-CBG's.

INTRODUCTION

One disease that requires a high cost and require long treatment time span as well as the complications can be life-threatening is hemophilia. Hemophilia is a bleeding disorder disease-derived, ie when a patient is bleeding then it will be is difficult to stop. The frequency of the incidence of hemophilia is 1 to 10,000 Approximately birth rate, where the incidence of hemophilia A is more than hemophilia B, which is about 80-85% of the total population of hemophilia.¹ According to the chairman of the Indonesian hemophilia community set the number of hemophiliacs in Indonesia reached twenty thousand people, with the ratio of the incidence of hemophilia 1: 10.000 in 2012. There is a chance the patient died before.²

Hemophilia is a disease that is costly, not only in terms of its direct costs alone (medical expenses) but also in terms of indirect costs.³ The direct costs in hemophiliacs highest drug costs, which reached 92% of total direct costs.⁴ Hemophiliac requires lifelong treatment using blood coagulation factor to manage the frequency of

occurrence of bleeding and reduce the risk of joint damage (as well as other potential organ damage) requiring surgery or resulting in restricted mobility. Prevention of bleeding with the use of factor concentrates become standard guidelines in the treatment of hemophilia.⁵

Analysis of disease cost (cost of illness) is a form of evaluation of the economic burden of an illness covers all health care resources consumed and to calculate the maximum number that can be saved when a disease can be overcome. In the cost analysis of the disease can include direct costs and indirect costs. Direct costs are costs incurred to address a particular disease, while the indirect costs associated with lost productivity during a particular illness. Analysis of disease cost (cost of illness) can give an idea to the decision makers in a situation where expenditure does not correspond to the real costs and can be used to plan for cost containment policies.⁶ The factors that mainly influenced the cost are length hospitalization, age, gender, payment model and the class of hospital.⁷



The difference in rates between hospitals as part of health care providers with INA-CBGs rates for the time being is still perceived as the problem, including for patients with hemophilia. In Indonesia alone, the only insurance that would cover the treatment of hemophilia is the National Health Insurance administered by the Social Security Agency (Center for Data and Information - The Ministry of Health of the Republic of Indonesia, 2015).

Research cost of illness in patients with hemophilia was done in order to determine the total cost of Hemophilia is based on the perspective of the hospital, knowing the difference cost of illness among patients with hemophilia A and hemophilia B, investigate the effect of the inhibitor on the cost of Hemophilia and to know the difference between the fare home sick with INA-CBGs package rates in hemophilia patient care.

METHODS

This research is non-experimental analytic with cross sectional study design. The data used were obtained retrospectively from the medical records of patients with hemophilia during the period September 2014 - August 2015 and of the finance department at the Hospital Dr. Sardjito. A coverage cost in the study conducted was the direct medical costs. This study was conducted based on the perspective of the hospital as a health care provider, using a prevalence approach.

The subjects in this study are the entire population of hemophilia patients in Hospital Dr. Sardjito period September 2014 - August 2015 met the inclusion criteria of the study. The inclusion criteria research subjects include: all hemophilia patients' hemophilia A or hemophilia B, hemophilia patients with or without inhibitors, and patients with hemophilia with medical records and finance data are complete. Exclusion criteria in this study are patients with HIV-AIDS disease.

In analyzing the data that has been taken, used several analysis steps include: Descriptive analysis, is used to describe a large total cost of Hemophilia, the components that make up the cost and has the largest contribution to the total cost of Hemophilia; Independent-samples t-test was used to determine the difference between the cost of disease hemophilia A and hemophilia B; one sample t-test was performed to determine the difference between the real cost of hemophilia patients with INA-CBGs rates. If obtained p-value <0.05, it can be concluded there is a significant difference between the two variables measured.

RESULTS AND DISCUSSION

Results of research conducted at the General Hospital Center Dr. Sardjito in patients with hemophilia, both hemophilia A with ICD-10 D-66 or hemophilia B with ICD-10 D-67, the result that the number of patients with Hemophilia at General Hospital Center Dr. Sardjito since September 2014 - August 2015 105 patients. The number

of patients who met the inclusion criteria, ie patients with complete data (medical records and finance data) as well as patients routinely conduct examinations of 35 patients, while 70 patients included in the exclusion criteria because the data is incomplete, the patient comes only once to the hospital to conduct laboratory tests.

Table 1: Characteristics of Patients Patients with Hemophilia Period September 2014 - August 2015 In Hospital Dr. Sardjito

Characteristics of Patients	The number of patients	Percentace	Total of Patients
Gender			
Male	35	100	35
Female	0	0	
Type of Hemophilia			
Hemophilia A	22	62,86	35
Hemophilia B	13	37,14	
Age of patients(years)			
Hemophilia A			
< 15	9	40,91	22
> 15	13	59,09	
Hemophilia B			
< 15	6	41,15	13
> 15	7	53,85	
Severity			
hemophilia A			
Mild	2	9,10	22
moderate	12	54,54	
Weight	8	36,36	
Hemophilia B			
Mild	0	0	13
moderate	7	53,85	
weight	6	46,15	
Inhibitor			
Hemophilia A			
Mild	1	50	2
moderate	0	0	
weight	1	50	
Hemophilia B			
Mild	0	0	0
Moderate	0	0	
Hight	0	0	

This study is an evaluation Pharmacoeconomics to estimate the disease costs (cost of illness) of hemophilia A and hemophilia B. The amount of direct medical cost in the cost of illness outpatient hemophilia patients is the

result of the calculation of administrative costs, the cost of medical services, the cost of medical action, costs medical support, as well as the cost of medicines and

medical devices from each episode once outpatient treatment for hemophilia patients for one year.

Table 2: Estimated Direct Medical Cost of Type A Hemophilia Disease Outpatient Over One Year in Hospital Dr. Sardjito Period September 2014 - August 2015

Komponen Biaya	N	mean (IDR)	SD (IDR)	Persentase (%)
Hemophilia A of mild				
Administrative	1	316.800	0	0,22
Medical service	1	1.728.000	0	1,20
Medical action	1	312.000	0	0,22
Medical support	1	175.000	0	0,12
Medical and medical devices	1	141.319.320	0	98,24
		143.851.120		100
Hemophilia A of mild with Inhibitor				
Administrative	1	528.000	0	0,12
Medical service	1	2.720.000	0	0,61
Medical action	1	430.667	0	0,10
Medical support	1	900.000	0	0,20
Medical and medical devices	1	438.655.000	0	98,97
		443.233.667		100
Hemophilia A of moderate				
Administrative	12	264.801	64.268	0,14
Medical service	12	1.381.579	377.253	0,73
Medical action	6	2.160.086	2.748.364	1,14
Medical support	3	1.356.333	1.632.022	0,72
Medical and medical devices	12	183.708.438	102.154.722	97,27
		188.871.237		100
Hemophilia A of weight				
Administrative	7	380.076	92.566	0,14
Medical service	7	1.903.275	492.285	0,70
Medical action	4	6.329.977	6.674.091	2,34
Medical support	5	1.107.700	962.461	0,41
Medical and medical devices	7	261.151.862	138.161.435	96,41
		270.872.890		100
Hemophilia A of weight with inhibitor				
Administrative	1	544.000	0	0,16
Medical service	1	2.600.000	0	0,75
Medical action	1	13.822.000	0	3,97
Medical support	1	175.000	0	0,05
Medical and medical devices	1	331.038.400	0	95,07
		348.179.400		100

Table 3: Estimated Direct Medical Cost of Type B Hemophilia Disease Outpatient Over One Year in Hospital Dr. Sardjito Period September 2014 - August 2015

Cost Components	n	Accounts (IDR)	SD	Percentage (%)
Hemophilia B moderate				
Administrative	7	334.841	111.982	0,05
Medical service	7	1.646.755	544.528	0,27
Medical action	1	7.287.000	0	1,22
Medical support	4	685.000	430.000	0,11
Medical and medical devices	7	592.566.425	258.380.186	98,35
		602.520.021		100
Hemophilia B of Weight				
Administrative	6	288.700	109.503	0,07
Medical service	6	1.369.333	509.604	0,33
Medical action	4	1.817.875	1.747.679	0,43
Medical support	2	625.000	388.909	0,15
Medical and medical devices	6	414.171.027	181.980.413	99,02
		418.271.935		100

On Hemophilia, both hemophilia A or hemophilia B cost of medicines and medical goods is the highest percentage costs compared to other costs, with the cost of drugs and medical items in patients with hemophilia are at 95.07% to 99.02%. The results of the Kodra et al (2014) showed that the drug was the direct health care costs take the biggest percentage is 98.14% for patients with hemophilia.⁴ In patients with severe hemophilia A and hemophilia B by weight, the cost for blood clotting factor of more than 90% of the total cost of treatment.⁸

Estimated cost of Hemophilia A and B without inhibitor in patients, based on the independent-samples t-test (Table

10) was obtained p-value of 0.000 indicating that there is a significant difference between the cost of disease hemophilia A and hemophilia B, where the cost of illness hemophilia B is higher than the cost of hemophilia A. this is influenced by higher prices of medicines (factor concentrates) in hemophilia B than the average hemophilia A. hemophilia A fee for one year is Rp. ± 213,033,935.85 116,829,978.92 and the average cost of Hemophilia B for one year is Rp. ± 513,489,154.46 235,925,885.89 (Table 4).

Table 4: Difference Estimated Cost Disease Hemophilia A and B Inhibitor without Outpatient Over One Year

Type of Hemophilia	n	mean (IDR)	SD	p-value
Hemophilia A	20	213.033.935,85	116.829.978,92	0,000
Hemophilia B	13	513.489.154,46	235.925.885,89	

Table 5: Differences in Disease Cost Estimates without Inhibitor Hemophilia A and Haemophilia A Inhibitors Outpatient with Over One Year

Type of Hemophilia	n	Mean (IDR)	SD
Hemophilia A tanpa inhibitor	20	213.033.935,85	116.829.978,92
Hemophilia A dengan inhibitor	2	395.706.533,50	67.213.516,77

Estimated costs for patients with hemophilia A with no inhibitor to patients with hemophilia A with inhibitors (Table 5) shows that the cost disease patients with hemophilia A with inhibitors is higher than the cost of the disease hemophilia A patients without inhibitors. The average cost for patients with hemophilia A with

inhibitors is Rp. ± 395,706,533.50 67,213,516.77 and hemophilia A with no inhibitor is Rp. ± 213,033,935.85 116,829,978.92. Costs are higher in patients with hemophilia A with inhibitors due to the necessary level of factor concentrates is higher compared to patients without hemophilia A inhibitor.

Data hemophilia patients were hospitalized in the Hospital Dr. Yogyakarta Sarjito period September 2014 - August 2015 was 9 patients out of a total of hemophilia patients (35), with a percentage of 25.71%. Number of treatment episodes of 9 patients was 13 episodes. Results of research Armstrong et al (2014) note that within five years, less than 50% of patients either hemophilia A or hemophilia B without inhibitor ever undergo hospitalization, whereas in hemophilia A and hemophilia B with inhibitors, the patient had been hospitalized at least one.⁹ Average Length of stay (LOS) in hemophilia patients was 5.77 ± 3.27 days.

Component of direct costs Hemophilia patients, equal to the direct cost component outpatient hemophilia patients

Table 6: Average Direct Cost of Hospitalization Hemophilia Disease In Episode 13 Care at Hospital Dr. Sardjito period September 2014 - August 2015

Cost component	n	Mean (IDR)	SD	Percentage (%)
In patient				
Administrasi	11	35.000	0	0,10
Pelayanan medik	13	1.152.615	592.000,13	3,23
Tindakan medik	9	250.891	225.584,87	0,70
Penunjang medik	10	975.850	1.378.986,68	2,73
Obat dan barang medik	13	32.458.219	23.632.034,51	90,96
Akomodasi	13	813.346	785.690,28	2,28
		35.685.921		100

Estimated cost of illness for one year at 26 hemophilia patients who underwent outpatient without hospitalization episode is Rp. 9,650,378,694.00, and the estimated costs of the disease for one year in 9 patients with hemophilia who underwent outpatient with

coupled with the cost of accommodation. Based on Table 6, the component cost of medicines and medical goods showed the greatest percentage (90.96%) among other cost components.

Estimated total cost of Hemophilia period September 2014 - August 2015 at the Hospital Dr. Sardjito, divided patients into outpatient care without episodes of inpatient and outpatient hospitalization episode. Based on table 7, patients undergoing outpatient without hospitalization, totaling 26 episodes and patients undergoing outpatient with inpatient episode amounted 9.

inpatient episode is Rp. 2,536,959,604.00. Estimated total cost of the disease in 35 patients without hemophilia both outpatient and inpatient episode by episode outpatient hospitalization for one year the period September 2014 - August 2015 is Rp. 12,187,338,298.00.

Table 7: Estimated Total Cost Disease Hemophilia Period September 2014 - August 2015 at the Hospital Dr. Sardjito

Patient care	Type of Hemophilia	n	Cost Total (IDR)
Out patient	A mild (Inhibitor)	1	443.233.667
	A moderate	8	1.593.033.644
	A weight	5	1.379.016.375
	B moderate	6	3.731.599.149
	B weight	6	2.503.495.860
			26
Out patient and in patient	A mild	1	163.796.070
	A moderate	4	930.503.239
	A weight (Inhibitor)	1	415.701.750
	A weight	2	586.073.945
	B moderate	1	440.884.600
			9
TOTAL		35	Rp. 12.187.338.298,00

One goal of this research was to determine whether there is a difference between the rates the hospital with INA-CBGs package rates in the treatment of hemophilia in the department Dr. Sardjito. Their difference in rates between the Hospital as part of health care providers

with INA-CBGs rates are still perceived as a problem, including for patients with hemophilia. The statistical analysis used to determine the difference between the real cost of hemophilia patients in the Hospital Dr. Sardjito with INA-CBGs rate is one sample t-test.

Table 8: Comparison of Rates INA-CBGs with Hemophilia Patients Rates Hospital Outpatient By Group Case The Hospital Dr. Sardjito

No	Grouping INA-CBGs	n	Rates INA-CBGs (IDR)	Mean rates of hospital (IDR)	p-value
1	C-3-23-0	14	720.900	983.000	-
2	D-3-10-0	21	1.781.500	1.015.619,04 ± 177.605,31	0,000
3	G-3-13-0	3	1.017.800	317.000 ± 136.963,49	0,012
4	M-3-16-0	3	345.500	106.333,33 ± 39.145,02	0,009
5	Q-5-42-0	1	309.800	78.000	-
6	Q-5-44-0	538	361.800	123.123,60 ± 187.667,00	0,000
7	Z-3-12-0	1	540.000	983.000	-
8	Z-3-19-0	1	601.900	1.972.000	-
9	Z-3-23-0	1	493.900	447.000	-
10	Z-3-27-0	11	414.400	208.681,81 ± 104.885,24	0,000

Based on the Ministry of Health of the Republic of Indonesia Number 59 of 2014 states that the claim on outpatient services hemophilia A and hemophilia B who receive clotting factor is done with the input of patient data according to service hemophilia A and hemophilia B INA-CBGs hospitalization. Apply additional payment of claims outside the INA-CBGs rates, which amount is equal to all the severity of the case as well as all classes of

treatments. Magnitude addition of hemophilia payment in accordance with the hospital and regionalization class fare. In the case of hemophilia patients an outpatient, the amount of additional payments hemophilia drug used for payment. Hospital Dr. Sardjito Yogyakarta which are in the regional first class hospitals, the amount of additional payment is Rp. 9,908,000.00, where the addition payments can only be claimed once a month.

Table 9: Differences in Drug Costs (within 1 year) Outpatient Payments Compared with Magnitude Addition Hemophilia

N	Mean Rates of hospital	Rate of INA-CBGs	p-value
35	Rp. 330.759.089,91 ± 220.823.860,35	Rp. 118.896.000,00	0,000

Statistical test results of one-sample t test showed that p-value = 0.000 so it can be seen that there is a significant difference between the cost of drugs based on hospital rates by the amount of additional costs beyond the claims of INA-CBGs. And rates on each episode of hospital inpatient care is higher than the rates INA-CBGs.

Grouping costs hemophilia disease in hospitalized patients by class patient care and for comparison with INA-CBGs rates, then grouped also by grouping INA-CBGs. According to the table 18 in the period September 2014 until August 2015, there were 13 episodes of inpatient care of patients with hemophilia. In grouping INA-CBGs D-4-11-I (mild blood clotting disorder) occurred in 8 episodes of inpatient care, with the first class treatment occurs in one episode of care, treatment of class II occurs in one episode of care, and treatment of Class III occurs on the 6th episode of care. Grouping INA-CBGs D-4-11-II

(moderate blood clotting disorder) occurs in one episode of treatment in class III. Grouping D-4-11-III (severe blood clotting disorder) occurs in one episode of treatment in class III. Grouping INA-CBGs M-4-18-III (bone and joint diseases, etc. weight) occurred in 2 episodes of treatment in class III. In grouping CBGs INA-U-4-14-III (oral and dental disease severe) occurred in one episode of treatment in class II. Based on Table 10, it can be seen that the rates on each episode of hospital care is higher than the rates INA-CBGs, except at no.8 hospital where there is a tariff of Rp. 620,600.00, which in this case are inpatients did not load hemophilia drugs (kosentrasi factor) which is the highest load in the treatment of hemophilia, hemophilia due to drugs (factor concentrates) have been taken earlier in the ambulatory care.

Table 10: INA-CBGs Grouping Hemophilia Patients Hospitalization

No	Code INA-CBGs	Class of patients care	LOS (days)	Rates of hospital (IDR)	Rates of INA- CBGs (IDR)
1	D-4-11-I	I	13	60.098.419,98	8.831.400,00
2	D-4-11-I	II	4	19.699.950,00	7.569.800,00
3	D-4-11-I	III	3	14.273.599,99	6.308.100,00
4	D-4-11-I	III	4	11.181.900,00	6.308.100,00
5	D-4-11-I	III	8	49.339.699,99	6.308.100,00
6	D-4-11-I	III	7	65.417.082,50	6.308.100,00
7	D-4-11-I	III	4	48.842.299,99	6.308.100,00
8	D-4-11-I	III	2	620.600,00	6.308.100,00
9	D-4-11-II	III	4	18.543.100,00	12.872.100,00
10	D-4-11-III	III	11	84.684.973,73	17.683.100,00
11	M-4-18-III	III	4	49.512.799,99	6.204.300,00
12	M-4-18-III	III	4	19.021.350,00	6.204.300,00
13	U-4-14-III	II	7	18.680.049,99	9.526.527,00

CONCLUSION

Estimates of the cost of outpatient for one year in patients with hemophilia A with no inhibitor is Rp 213,033,935.85 ± 116,829,978.92, mild hemophilia A with inhibitors 57.6 BU is Rp 443,233,667.00, severe hemophilia A with inhibitors 23.36 BU is Rp 348,179,400.00 and hemophilia B without inhibitor is Rp. 513,489,154.46 ± 235,925,885.89. The average cost of Hemophilia each episode of hospitalization is Rp. 34,674,023.32 ± 26,169,586.84. Estimated total cost of hemophilia for one year period September 2014 - August 2015 is Rp. 12,187,338,298.00. The results of independent-samples t-test, there is significant differences between the cost of Hemophilia A and Hemophilia B without inhibitor in outpatients, with p-value of 0.000. The cost of Hemophilia B is higher than the cost of hemophilia A disease. The cost of hemophilia A disease is higher in patient with inhibitor than without inhibitor. Outpatient hospital there are some rates greater than rates INA-CBGs. While in hospitalization, the average rates for each episode of hospital care is higher than the rate INA-CBGs.

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