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Analysis of the Differences in Unit Costs for Bronchopneumonia Services Based on Clinical Pathway with INACBGs Rates and Hospital Rates at Dr. RSAL. Mintohardjo

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Abstract. *Hospital is one of the health service facilities that tries to overcome the health service balance between investment costs and the availability of applicable unit costs. Calculation of unit costs has an important role, including being used for budget planning, cost control, subsidies and as information in decision making. In the era of National Health Insurance (JKN) in Indonesia, Hospitals that cooperate with the Social Security Administering Agency (BPJS) Health are paid using the Indonesian Case Base Groups (INACBGs) package system. The acquisition of claim payments at Dr. Mintohardjo Naval Hospital according to the INACBGs rate compared to Hospital costs has a negative difference value for Bronchopneumonia cases. The purpose of this study was to analyze the difference in unit costs of Bronchopneumonia services based on Clinical Pathway towards the determination of INACBGs Rates and Hospital Rates at Dr. Mintohardjo Naval Hospital. This type of research is quantitative, comparative analytical observation using a cross-sectional research design according to the Hospital perspective. The subjects of the study were Medical Records and BPJS Kesehatan claim files for Bronchopneumonia services for the period April to September 2023, totaling 61 files. The study was conducted from January 2024 to April 2024. Data analysis used the paired t-test statistical method in the statistical test application (SPSS Version 26). The results of the study on calculating unit costs using the Activity Based Costing (ABC) method are as follows: 1) There is a difference between the calculation of unit costs with INACBGs rates of negative 6.2% and unit costs with Hospital rates of positive 11.2%, 2) There is a difference in the unit cost of Bronchopneumonia services based on Clinical Pathway with the Activity Based Costing method against INA-CBGs Rates, 3) There is a difference in the unit cost of Bronchopneumonia services based on Clinical Pathway with the Activity Based Costing method against Hospital Rates. The suggestions in this study are: 1) For the financial management of RSAL Dr. Mintohardjo to improve competence in calculating unit cost rates for services based on clinical pathways with the Activity Based Costing method, one of which is through training, 2) Updating and conducting clinical pathway audits periodically, 3) Re-evaluating hospital rates to increase the margin of each service so that the margin obtained is in accordance with what has been set, 4) Digitizing patient usage data that was previously still written manually to avoid errors in entering details of service costs.*

Keywords: *ABC, Bronchopneumonia, Clinical Pathway, INACBG's, Unit Cost*

1. INTRODUCTION

Unit cost calculations have an important role, including being used to determine tariffs, information about unit costs is used for budget planning, cost control, subsidies and as information in decision making. Unit cost calculations have the aim of ensuring that hospital efficiency and performance can be monitored properly so that unit cost calculations are useful for strengthening hospital defenses in tight business competition.

Hospitals need to calculate product costs to determine the method to be applied. There are several methods that can be used to calculate product costs, including the Activity Based Costing (ABC) method and the Double Distribution method. According to (Kaplan and

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Cooper, 1998) found that the use of the Activity Based Costing method was proven to be able to overcome the problem of cost distortion, but its implementation required expensive costs both in terms of finance and time. The weaknesses of the Activity Based Costing method include distortion of data accuracy, inaccurate trigger levels, expensive time and resources, limited system integrity, complexity of actual activities that are not captured and difficulty in modeling multi-drivers.

In the era of National Health Insurance (JKN) in Indonesia, hospitals must make efforts to improve the quality of good services, so that good service quality is achieved. Therefore, there is a need to improve various sectors or service units in hospitals. Hospital service is synonymous with patient care, so it is necessary to evaluate employee attitudes in the service process, both in outpatient and inpatient service units.

Indonesian Navy Hospital (Rumkital) Dr. Mintohardjo is one of the TNI Navy Hospitals in the western region which is designated as a Class/Type B Hospital. This hospital is located on Jl. Lower Dam No. 17 Pejompongan Central Jakarta, where the management is carried out by the Djakarta Maritime Regional Command Health Service which is located at Jalan Prapatan No. 48 Jakarta. Until now RSAL Dr. Mintohardjo has an inpatient service capacity of 229 beds. Based on data taken from Dr. RSAL's service performance report. Mintohardjo in the period January to December 2022, the average outpatient visit at RSAL Dr. Mintohardjo is 3% dominated by insurance patients, 7% is general patients and 90% is BPJS Health patients (including TNI, TNI families and TNI retirees). Meanwhile, 1% of inpatient visits are dominated by insurance patients, 4% are general patients and 95% are BPJS Health patients (including TNI, TNI families and TNI retirees).

Table 1.

Sample List of Discrepancies between INACBG Rates and Hospital Rates for September 2023 at RSAL Dr. Mintohardjo

Patient	Diagnosis	Class	INACBG rates	Hospital rates	Tariff Difference
1	*Bronchopneumonia*	1	5,169,800	7,150,000	-1,980,200
2	*Bronchopneumonia*	2	4,528,400	6,840,000	-2,311,600
3	*Bronchopneumonia*	3	3,887,000	5,320,000	-1,433,000

From a sample list of discrepancies between INACBG rates and hospital rates for September 2023 at RSAL Dr. Mintohardjo noted that cases of bronchopneumonia have an average INACBG rate of IDR. 4,528,400 with an average hospital rate of Rp. 6,840,000 thus obtaining a difference of Rp. 2,311,600.

Based on the results of interviews with the Deputy Chief Medical Officer, Casemix Coordinator, Head of Accounts (Finance), and RSAL Revenue Treasurer Dr. Mintohardjo stated that claims obtained according to INACBG rates and hospital costs have a negative difference value for Bronchopneumonia cases so that currently the management of RSAL Dr. Mintohardjo concluded that he experienced losses in services for cases of this disease because it was hoped that the standard claim value obtained from each service would have a value that was not much different from the INACBGs rates looking at the rates of competitors around the hospital with the current ideal profit margin of 30%. However, due to its business focus, RSAL Dr. Mintohardjo has not previously used a unit cost calculation method in determining hospital rates, therefore the researcher intends to conduct research related to unit costs at RSAL Dr. Mintohardjo.

Based on the data above, the author is interested in conducting research entitled "Analysis of Unit Cost Differences in Clinical Pathway-based Bronchopneumonia Services with INACBGs Rates and Hospital Rates at RSAL Dr. Mintoharjo."

Conceptual Framework

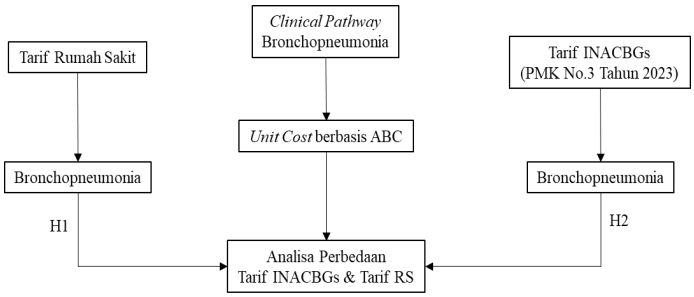

Figure 2.

Research Conceptual Framework

Research Hypothesis

H1 : There is a difference in rates between hospital rates and Activity Based Costing unit costs for Bronchopneumonia services at RSAL Dr. Mintohardjo

H2 : There is a difference in rates between INACBGs rates and Activity Based Costing unit costs for Bronchopneumonia services at RSAL Dr. Mintohardjo

2. RESEARCH METHODS

This type of research is quantitative, comparative analytical observation using a cross sectional research design from a hospital perspective. The data collection method was carried out retrospectively, namely tracing patient medical record documents, BPJS Health payment claims, treatment costs for Bronchopneumonia patients, hospital clinical pathways, and calculating hospital rates.

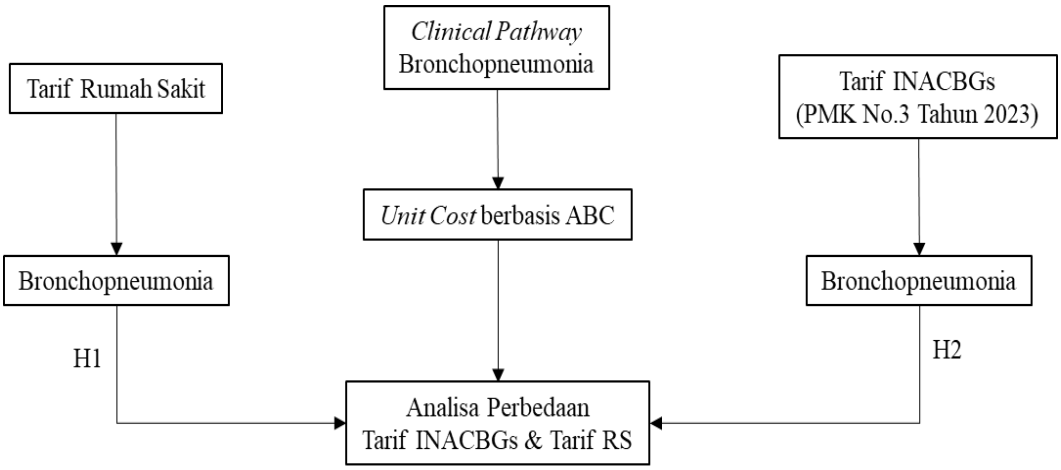

Figure 3. Research Constellation

3. RESULTS AND DISCUSSION

Research result

Research Subjects

The subjects of this research were obtained from 61 medical record files (claims) of patients who had been treated at RSAL Dr. Mintohardjo with a diagnosis of Bronchopneumonia during the period April – September 2023. The results contained in the claim provide an illustration of the unit cost calculation for Bronchopneumonia services at RSAL Dr. Mintohardjo uses the Activity Based Costing (ABC) method based on Clinical Pathway, consumable medical materials, number of activities, operational costs, salaries and depreciation.

Table 2. Description of Unit Cost Data for Bronchopneumonia Services Based on Clinical Pathway using the Activity Based Costing method, INACBGs Rates, Hospital Rates at RSAL Dr. Mintohardjo in 2023

No	Name/Age	Class			INACBG rates	Hospital rates	Clinical Pathway		*Unit costs are based on Clinical Pathway with the Activity Based Costing method*
		1	2	3			In accordance	No In accordance	
1	Tn. H/56			√	3.887.000	5.320.000	√		4.200.000
2	Tn. M.C/47		√		**8.820.400**	10.850.000		√	**9.100.000**
3	Ny. H.R/52			√	3.887.000	5.320.000	√		4.200.000
4	Ny. M.S/48	√			10.069.700	11.450.000	√		**9.100.000**
5	Tn. A.R/51			√	3.887.000	5.320.000	√		4.200.000
6	Tn. K/66			√	**7.571.200**	9.560.000		√	**7.800.000**
7	Tn. R.F/52			√	3.887.000	5.320.000	√		4.200.000
8	Tn. E.K/61		√		**4.528.400**	6.840.000		√	**4.800.000**
9	Ny. V/57			√	3.887.000	5.320.000	√		4.200.000
10	Nn. S/28			√	3.887.000	5.320.000	√		4.200.000
11	Tn. M.E/47			√	3.887.000	5.320.000	√		4.200.000
12	Ny. S/58			√	**7.571.200**	8.860.000		√	**7.800.000**
13	Ny. P.D/39			√	3.887.000	5.320.000	√		4.200.000
14	Tn. D.N/46			√	3.887.000	5.320.000	√		4.200.000
15	Tn. T/33			√	3.887.000	5.320.000	√		4.200.000
16	Tn. W.S/57			√	3.887.000	5.320.000	√		4.200.000
17	Tn. C.P/42			√	3.887.000	5.320.000	√		4.200.000
18	Ny. R.N/58	√			10.069.700	11.740.000		√	**10.200.000**
19	Ny. F/47			√	3.887.000	5.320.000	√		4.200.000
20	Tn. M.R/51		√		4.528.400	5.320.000	√		4.200.000
21	Tn. I.H/54			√	3.887.000	5.320.000	√		4.200.000
22	Tn. R.U/39			√	3.887.000	5.320.000	√		4.200.000
23	Tn. A.S/38			√	3.887.000	5.320.000	√		4.200.000
24	Ny. F.S/45			√	3.887.000	5.320.000	√		4.200.000
25	Tn. R.M/44			√	**7.571.200**	8.860.000	√		**7.800.000**
26	Ny. N/48			√	**5.169.800**	8.860.000	√		**7.800.000**
27	Ny. S.R/41			√	3.887.000	5.320.000	√		4.200.000
28	Tn. R.P/44			√	3.887.000	5.320.000	√		4.200.000
29	Tn. K.S/46			√	3.887.000	5.320.000	√		4.200.000
30	Tn. Y/59	√			**10.069.700**	12.730.000		√	**10.200.000**
31	Tn. M.W/64			√	3.887.000	5.845.000		√	4.200.000
32	Ny. L.K/69			√	3.887.000	6.240.000		√	4.200.000
33	Nn. S/27		√		**4.528.400**	6.840.000	√		**4.800.000**
34	Tn. B.C/63			√	3.887.000	5.320.000	√		4.200.000
35	Tn. K.R/47			√	3.887.000	5.320.000	√		4.200.000
36	Tn. B.W/31			√	3.887.000	5.320.000	√		4.200.000
37	Tn. F.S/71			√	3.887.000	6.572.000		√	4.200.000
38	Tn. S/64			√	**7.571.200**	8.860.000	√		**7.800.000**
39	Ny. I.R/56			√	3.887.000	5.320.000	√		4.200.000
40	Tn. R.M/68	√			**10.069.700**	14.250.000		√	**10.200.000**
41	Ny. A.R/40			√	3.887.000	5.320.000	√		4.200.000
42	Ny. T/49			√	3.887.000	5.320.000	√		4.200.000

No	Name/Age	Class			INACBG rates	Hospital rates	Clinical Pathway		*Unit costs are based on Clinical Pathway with the Activity Based Costing method*
		1	2	3			In accordance	No In accordance	
43	Tn. M.T/61			√	3.887.000	5.320.000	√		4.200.000
44	Tn. S.N/63			√	3.887.000	5.320.000	√		4.200.000
45	Tn. M.Y/59			√	3.887.000	5.320.000	√		4.200.000
46	Tn. M.H/64			√	3.887.000	6.220.000		√	4.200.000
47	Ny. N.H/70		√		4.528.400	7.840.000		√	4.800.000
48	Ny. E.G/36			√	3.887.000	5.320.000	√		4.200.000
49	Tn. J.S/68			√	3.887.000	5.320.000	√		4.200.000
50	Ny. S.F/43			√	3.887.000	5.320.000	√		4.200.000
51	Ny. I.S/47		√		4.528.400	6.840.000	√		4.800.000
52	Tn. V.S/44			√	3.887.000	6.640.000		√	4.200.000
53	Tn. M.N/64			√	7.571.200	9.080.000		√	7.800.000
54	Ny. L/55			√	3.887.000	5.320.000	√		4.200.000
55	Tn. I.P/65			√	3.887.000	6.120.000		√	4.200.000
56	Ny. L.P/56			√	7.571.200	7.150.000	√		7.800.000
57	Ny. M.A/62			√	3.887.000	5.320.000	√		4.200.000
58	Ny. K.R/41			√	3.887.000	5.320.000	√		4.200.000
59	Ny. D.R/47		√		4.528.400	6.840.000	√		4.800.000
60	Tn. U.S/60			√	3.887.000	5.320.000	√		4.200.000
61	Tn. M.R/64			√	3.887.000	5.320.000	√		4.200.000
Total		**4**	**7**	**50**	**294.007.600**	**397.247.000**	**46**	**15**	**312.200.000**

Based on table 2, the above shows that there were 4 class 1 patients (6.6%), there were 7 class 2 patients (11.5%), and there were 50 class 3 patients (81.9%). Furthermore, it can also be seen that there were 46 cases (75.4%) according to the clinical pathway, and there were 15 cases (24.6%) not according to the clinical pathway. Next is the total INACBGs tariff of Rp.

294,007,600, hospital rates of Rp. 397,247,000 and unit costs based on Clinical Pathway using the Activity Based Costing method of Rp. 312,200,000.

Bronchopneumonia service stages based on Clinical Pathway

Stages of Bronchopneumonia service activities at RSAL Dr. Mintohardjo is based on Clinical Pathway. The patient care plan on the Clinical Pathway is for 5 days. Includes care from pulmonary doctors, nurses, nutrition, laboratory, medical (medicine), discharge planning.

On the first day of admission to the emergency room, the patient undergoes a supporting examination in the form of a complete blood test, chest x-ray, oxygen administration, infusion and drug therapy according to the initial symptoms and complaints of admission to the hospital.

On the first day of treatment in the inpatient room, the patient is examined by the doctor in charge (DPJP), carried out routine or additional laboratory tests, given further or additional drug therapy and a nutrition consultant for diet planning.

On the second to fourth day of treatment in the inpatient room, the patient is examined by the doctor in charge (DPJP) to evaluate the progress of the patient's condition, routine or additional laboratory investigations are carried out to evaluate the doctor's therapy, chest x-ray supporting examinations are carried out according to indications of the patient's clinical development and therapy is given. follow-up or additional medication according to the patient's clinical development.

On the fifth day of treatment in the inpatient room, the patient is examined by the doctor in charge (DPJP) to evaluate the progress of the patient's condition as well as preparations for the patient's return, treatment while at home until the scheduled return to the Polyclinic.

Clinical pathways are categorized as appropriate if the class of care, length of stay, examination and treatment are carried out based on the clinical pathway checklist.

Clinical pathways are categorized as inappropriate if the class of care, length of stay, examinations and treatment carried out exceed the clinical pathway checklist which can be caused by large variations in services.

Unit Cost for Bronchopneumonia services using the Activity Based Costing (ABC) method

a. Direct costs

These are costs that are directly related to services. Costs of consumables (drugs and laboratory materials) and medical services (doctors, nurses). These direct costs include variable costs, which are costs that change in total in proportion to changes in activity levels or total volume.

b. Direct overhead costs

These are unit costs that are directly related to services. There are 6 units (Information Services, Treatment Room, Laundry & CSSD Room, Laboratory Installation, Pharmacy Installation, Billing Room). Direct costs consist of operational costs, salary costs, maintenance costs, medical depreciation costs, non-medical depreciation costs.

c. Indirect overhead costs

These are costs from cost drivers whose activities are involved in the patient service process (Medical Records Services, Information and Technology, IPSRS, K3, PPI, Management and Administration Services). Indirect costs consist of operational costs, salary costs, maintenance costs, non-medical depreciation costs. (See table 4.3)

Univariat

Univariate analysis in this study was to determine the statistical description of the unit costs of Bronchopneumonia services based on Clinical Pathway using the Activity Based Costing method, INACBGs Rates and Hospital Rates at RSAL Dr. Mintohardjo. The results of research on 61 patient files are presented in the form of numerical data, namely mean (average), median, and minimum and maximum values.

Unit Cost

Table 3. Details of Unit Costs for Clinical Pathway Based Bronchopneumonia Services using the Activity Based Costing method at RSAL Dr. Mintohardjo in 2023

CLASS	INFORMATION	DETAILS	NOMINAL
1	SLIGHT (Single diagnosis without other diagnoses as complications)	Salaries for doctors, nurses, medicine, BMHP	1.600.000
		Direct overhead (Operations, maintenance, Officer salaries, medical and non-medical depreciation)	3.700.000
		Indirect overhead (Operations, maintenance, Officer salaries, non-medical depreciation)	
		Unit Cost	**5.300.000**
	MEDIUM (Single diagnosis accompanied by other diagnoses as complications)	Salaries for doctors, nurses, medicine, BMHP	2.700.000
		Direct overhead (Operations, maintenance, Officer salaries, medical and non-medical depreciation)	7.500.000
		Indirect overhead (Operations, maintenance, Officer salaries, non-medical depreciation)	
		Unit Cost	**10.200.000**
2	SLIGHT (Single diagnosis without other diagnoses as complications)	Salaries for doctors, nurses, medicine, BMHP	1.040.000
		Direct overhead (Operations, maintenance, Officer salaries, medical and non-medical depreciation)	3.660.000
		Indirect overhead (Operations, maintenance, Officer salaries, non-medical depreciation)	
		Unit Cost	**4.800.000**
	MEDIUM (Single diagnosis accompanied by other diagnoses as complications)	Salaries for doctors, nurses, medicine, BMHP	2.450.000
		Direct overhead (Operations, maintenance, Officer salaries, medical and non-medical depreciation)	1.200.000
		Indirect overhead (Operations, maintenance, Officer salaries, non-medical depreciation)	5.450.000
		Unit Cost	**9.100.000**
3	SLIGHT (Single diagnosis without other diagnoses as complications)	Salaries for doctors, nurses, medicine, BMHP	910.000
		Direct overhead (Operations, maintenance, Officer salaries, medical and non-medical depreciation)	3.290.000
		Indirect overhead (Operations, maintenance, Officer salaries, non-medical depreciation)	
		Unit Cost	**4.200.000**
	MEDIUM (Single diagnosis accompanied by other diagnoses as complications)	Salaries for doctors, nurses, medicine, BMHP	1.750.000
		Direct overhead (Operations, maintenance, Officer salaries, medical and non-medical depreciation)	6.050.000
		Indirect overhead (Operations, maintenance, Officer salaries, non-medical depreciation)	
		Unit Cost	**7.800.000**

Sumber: RSAL dr. MINTOHARDJO

Table 4. Univariate Unit Cost of Bronchopneumonia Services Based on Clinical Pathway with Activity Based Costing method at Dr. Mintohardjo Naval Hospital in 2023

Rates	Mean	Median	Minimal	Maximum
Unit cost of Bronchopneumonia services based on Clinical Pathway	5.118.032.79	4.200.000.00	4.200.000	10.200.000

Based on table 5 above, it can be seen that the minimum unit cost of Bronchopneumonia services based on Clinical Pathway with the Activity Based Costing method is IDR 4,200,000. The median is IDR 4,200,000 (frequency 72.1%), and the maximum unit cost is IDR 10,200,000, meaning that RSAL Dr. Mintohardjo serves many patients with the smallest payments.

Table 5. Univariate INACBGs Tariffs for Bronchopneumonia Services at Dr. Mintohardjo Naval Hospital in 2023

Rates	Mean	Median	Minimal	Maximum
INACBGs Rates	4.819.796.72	3.887.000.00	3.887.000	10.069.700

Based on table 5 above, it can be seen that the median INACBGs rate is IDR 3,887,000 (frequency 70.5%), the minimum rate is IDR 3,887,000 and the maximum rate is IDR 10,069,700, meaning that RSAL Dr. Mintohardjo serves many class 3 patients with the smallest payment value.

Table 6. Univariate Hospital Rates for Bronchopneumonia Services at Dr. Mintohardjo Naval Hospital in 2023

Rates	Mean	Median	Minimal	Maximum
Hospital Rates	5.766.098.36	5.320.000.00	4.200.000	14.250.000

Based on table 6 above, it can be seen that the average hospital rate for Bronchopneumonia services is Rp. 5,766,098.36, the median is Rp. 5,320,000 (frequency 26.2%), the minimum hospital rate is Rp. 4,200,000 and the maximum hospital rate is Rp. 14,250,000, meaning that the average hospital rate is 37.3% higher than the minimum rate.

Bivariate Analysis

Data normality

Table 7. Normality Test for Unit Cost Variable Data for Clinical Pathway Based Bronchopneumonia Services using the Activity Based Costing Method, INACBGs Rates and Hospital Rates at RSAL Dr. Mintohardjo

No.	Variable	Asymp sig	Information
1.	*Unit cost of Bronchopneumonia services based on Clinical Pathway*	1.126	Normal
2.	INACBGs rates for Bronchopneumonia services	1.410	Normal
3.	Hospital rates for Bronchopneumonia services	1.185	Normal

Based on table 4.10 above. Based on the Kolmogrov – Smirnov data normality test (samples > 50) above, it can be seen that all variables have a normal data distribution because asymp sig > 0.05.

T test

Differences in the unit cost of Clinical Pathway-based bronchopneumonia services and the Activity Based Costing method on INACBGs rates

Table 8. Differences in Unit Costs for Bronchopneumonia Services Based on Clinical Pathway and Activity Based Costing Methods on INACBGs Rates at RSAL Dr. Mintohardjo in 2023

Variable	N	Mean	SD	P *value*
Unit cost for Broncho pneumonia services based on Clinical Pathway using the Activity Based Costing method	61	5.118.032.79	1.812.595.57	0,000
INACBGs rates for Broncho pneumonia services	61	4.819.796.72	1.869.575.60	

Based on table 8 above, it can be seen that the unit cost of Clinical Pathway based Bronchopneumonia services using the Activity Based Costing method is Rp. 5,118,032.79 and a standard deviation of 1,812,595.57, while the average INACBGs fee for Bronchopneumonia services is Rp. 4,819,796.72 and a standard deviation of 1,869,575.60. The statistical test results of the t paired sample test obtained p value = 0.000 < 0.05, meaning Ho is rejected, there is a difference in the unit cost of Clinical Pathway based Bronchopneumonia services with the Activity Based Costing method on the INACBGs rates at RSAL Dr. Mintohardjo in 2023.

Differences in unit costs for Bronchopneumonia services based on Clinical Pathway and Activity Based Costing methods on hospital rates

Table 9. Differences in Unit Costs for Bronchopneumonia Services Based on Clinical Pathway and Activity Based Costing Methods on Hospital Rates at RSAL Dr. Mintohardjo in 2023

Variable	N	Mean	SD	P *value*
Unit cost for Broncho pneumonia services based on Clinical Pathway using the Activity Based Costing method	61	5.118.032.79	1.812.595.57	0,000
Hospital rates for Broncho pneumonia services	61	6.342.295.08	2.033.538.29	

Based on table 9 above, it can be seen that the unit cost of Clinical Pathway based Bronchopneumonia services using the Activity Based Costing method is Rp. 5,118,032.79 and a standard deviation of 1,812,595.57, while the average hospital rate for Bronchopneumonia services is Rp. 5,766,098.36 and a standard deviation of 2,019,935.95. The statistical test results of the t paired sample test obtained p value = 0.000 < 0.05, meaning Ho is rejected, there is a difference in the unit cost of Clinical Pathway based Bronchopneumonia services with the Activity Based Costing method on Hospital Rates at RSAL Dr. Mintohardjo in 2023.

Table 10

Comparison of the difference between unit costs, BPJS rates and hospital rates according to class

Class	Unit Cost	INACBGs Rates	RS Rates	difference	
				INACBGs Rates	RS Rates
1	39.700.000	40.278.800	50.170.000	578.800	10.470.000
2	37.300.000	35.990.800	51.370.000	1.309.200	14.070.000
3	235.200.000	217.738.000	295.707.000	17.462.000	60.507.000

Comparing the difference between unit costs, BPJS rates and hospital rates according to class, it is known that, for class 1, the difference between unit costs and INACBGs rates is IDR 578,800, while the difference between unit costs and hospital rates is IDR. 10,470,000. Next, for class 2, the difference between the unit cost and the INACBGs tariff is IDR. 1,309,200, while the difference between the unit cost and the hospital tariff is Rp. 14,070,000. Finally, for class 3, the difference between the unit cost and the INACBGs tariff is IDR. 17,462,000, while the difference between the unit cost and the hospital tariff is IDR. 60,507,000.

Discussion

Univariate Unit Cost Rates, INACBG Rates and Hospital Rates

Statistical Description of Unit Costs for Bronchopneumonia Services Based on Clinical Pathway using the Activity Based Costing method at RSAL Dr. Mintohardjo In 2023, it is known that the average unit cost of Clinical Pathway based Bronchopneumonia services using the Activity Based Costing method is IDR. 5,118,032.79, median of Rp. 4,200,000.00, minimum unit cost of Rp. 4,200,000 and the maximum unit cost is IDR. 10,200,000. The details of patients who received Clinical Pathway Based Bronchopneumonia services using the Activity Based Costing method at RSAL Dr. Mintohardjo In 2023, out of 61 Bronchopneumonia patients, 4 people were in the class 1 category (6.6%), 7 people were in class 2 (11.5%), and 50 people were in class 3 (81, 9%). This means that patients who receive Clinical Pathway Based Bronchopneumonia services using the Activity Based Costing method at RSAL Dr. Mintohardjo in 2023 will be dominated by patients in the class 3 category.

Statistical Description of INACBGs Rates for Bronchopneumonia Services at RSAL Dr. Mintohardjo In 2023, based on table 4.7 above, it can be seen that the average INACBGs fee for Bronchopneumonia services is IDR. 4,819,796.72, median of Rp. 3,887,000.00, the minimum INACBGs tariff is IDR. 3,887,000 and the maximum INACBGs tariff is IDR. 10,069,700.

Statistical Description of Hospital Rates for Bronchopneumonia Services at RSAL Dr. Mintohardjo In 2023, based on table 4.9 above, it can be seen that the average hospital rate for Bronchopneumonia services is Rp. 5,766,098.36, median of Rp. 5,320,000.00, minimum hospital fee of Rp. 4,200,000 and the maximum hospital fee is IDR. 14,250,000.

Differences in the unit cost of Clinical Pathway-based bronchopneumonia services and the Activity Based Costing method on INACBGs rates

Based on the research results, it can be seen that the average unit cost of Clinical Pathway based Bronchopneumonia services using the Activity Based Costing method is IDR. 5,118,032.79 and a standard deviation of 1,812,595.57, while the average rate for INA-CBGs Bronchopneumonia services is Rp. 4,819,796.72 and a standard deviation of 1,869,575,607. The statistical test results of the t paired sample test as in table 4.11 show that p value = 0.000 < 0.05, meaning that Ho is rejected, there is a difference in the unit cost of Clinical Pathway based Bronchopneumonia services with the Activity Based Costing method on INA-CBGs rates at RSAL Dr. Mintohardjo in 2023.

Based on the book Using Casemix System for Hospital Reimbursement in Social Health Insurance Program: Comparing Casemix System and Fee-For-Service as Provider Payment Method in realizing the National Health Insurance (JKN) program, the Government of the Republic of Indonesia issued Law Number 40 of 2004 concerning The National Social Security System (SJSN) was established with the consideration of providing social security in developing Universal Health Coverage (UHC) for all Indonesian people, and establishing the Social Security Administering Body (BPJS) as the body administering the security program health, the implementation of which began on January 1 2014.

Meanwhile, the calculation of unit costs for bronchopneumonia services based on Clinical Pathway using the Activity Based Costing method uses more detailed and accurate calculations related to each activity that occurs in each action of bronchopneumonia services. Unit costs are calculated based on the activities contained in the Bronchopneumonia clinical pathway with the resources used in each action, which are then entered into the Bronchopneumonia Proportion Matrix. The cost components in the proportion matrix are classified into 3, namely direct costs, direct overhead costs and indirect overhead costs. Meanwhile, hospital rates for Bronchopneumonia services. Based on the research results, it was found that the average unit cost of Clinical Pathway based Bronchopneumonia services using the Activity Based Costing method was IDR. 5,118,032.79, while the average rate for INA-CBGs Bronchopneumonia services is Rp. 4,819,796.72 then we get a difference of IDR 298,236.07 or 6.2% or below the 30% margin. If the comparison results of INA-CBGs rates

are lower than unit costs, this could disrupt hospital operations because most of the patients who receive Bronchopneumonia services at RSAL Dr. Mintohardjo is a JKN patient.

Differences in unit costs for Bronchopneumonia services based on Clinical Pathway and Activity Based Costing methods on hospital rates

Based on the research results, it can be seen that the average unit cost of Clinical Pathway based Bronchopneumonia services using the Activity Based Costing method is IDR. 5,118,032.79 and a standard deviation of 1,812,595.59, while the average hospital rate for Bronchopneumonia services is Rp. 5,766,098.36 and a standard deviation of 2,019,935.95. The statistical test results of the t paired sample test as in table 4.12 showed that Ho was rejected, meaning that there was a difference in the unit cost of Bronchopneumonia services based on Clinical Pathway and the Activity Based Costing method on Hospital Rates at RSAL Dr. Mintohardjo in 2023**.**

Research Findings

Based on a comparison of the difference between unit costs, BPJS rates and hospital rates according to class, it is known that, for class 1, the difference between unit costs and INACBGs rates is IDR 578,800, while the difference between unit costs and hospital rates is IDR. 10,470,000. Next, for class 2, the difference between the unit cost and the INACBGs tariff is IDR. 1,309,200, while the difference between the unit cost and the hospital tariff is Rp. 14,070,000. Finally, for class 3, the difference between the unit cost and the INACBGs tariff is IDR. 17,462,000, while the difference between the unit cost and the hospital tariff is IDR. 60,507,000.

The final result of the findings obtained by researchers regarding the unit cost of Bronchopneumonia services is that the average unit cost of Bronchopneumonia services based on Clinical Pathway using the Activity Based Costing method is IDR. 5,118,032.79, while the average hospital rate for Bronchopneumonia services is Rp. 5,766,098.36 then we get a positive difference of IDR 648,065.57 or 11.2% but still below the 30% margin. Meanwhile, if the unit cost is compared with the average INACBGs tariff of Rp. 4,819,796.72 then we get a negative difference of IDR 298,236.07 or negative 6.2%.

Research Limitations

The research instrument or data used in this research refers to all Medical Records data and BPJS Health claim files for Bronchopneumonia services at RSAL Dr. Mintohardjo, it is possible that the data is less valid due to human error, errors in calculating costs (prices).

This research did not calculate unit costs in detail regarding direct costs, direct overhead costs and indirect overhead costs due to limited data obtained from hospitals, researchers only obtained unit cost data that had been previously processed or globally.

4. CONCLUSION

There is a difference between the unit cost calculation with the INA CBGs rate of negative 6.2% and the unit cost with the Hospital rate of positive 11.2%.

There is a difference in the unit cost of Clinical Pathway-based bronchopneumonia services and the Activity Based Costing method regarding INA-CBGs rates.

There is a difference in the unit cost of Bronchopneumonia services based on Clinical Pathway and the Activity Based Costing method on Hospital Rates.

Implications

Theoretical Implications

The results of the hypothesis test show that there is a difference in the unit cost of Bronchopneumonia services based on Clinical Pathway and the Activity Based Costing method on INA-CBGs rates and on hospital rates at RSAL Dr. Mintohardjo. This finding is in accordance with the theory according to Croucher (2005) regarding the benefits of the Clinical Pathway regarding standardization of service outcomes, so that it will be cost effective and function as a dynamic instrument that can respond to input from staff, patients, clinical responses, the latest references if the Clinical Pathway design is always in place. review. In line with the results of hypothesis testing, according to Blocher et al., (2008) regarding the benefits of the Activity Based Costing method, one of which is to unite product costs more accurately and informatively, which leads to more accurate measurement of product profitability on strategic decisions, on selling prices, product lines, markets. , and capital expenditure where although the difference in the unit cost of Clinical Pathway based Bronchopneumonia services with the Activity Based Costing method on Hospital Rates is not in accordance with the expected profit margin, with this method a positive difference can be obtained from the unit cost calculation on Hospital Rates.

Managerial Implications

Financial management of RSAL Dr. Mintohardjo needs to improve competence in calculating unit cost rates for clinical pathway-based services with the Activity Based Costing method, one of which is through training.

Reviewing regulations related to the determination of diagnoses and actions by the Doctor in Charge of Services.

Improving the data recording system, especially those related to unit costs such as data on the number of employees, employee salaries, Hospital facilities and others.

Updating and conducting clinical pathway audits periodically.

Re-evaluating Hospital rates to increase the margin of each service so that the margin obtained is in accordance with what has been set.

Hospital Management reviews and forms a team for Hospital tariffs based on Unit Cost calculations.

Digitizing patient usage data to avoid errors in entering details of service costs.

Calculation of the unit cost of Bronchopneumonia services can be a model for calculating the unit cost of other disease services.

The next unit cost calculation in the Hospital can try using other recommended methods such as calculations using the Double Distribution method

Suggestion

For research sites

Conduct reconciliation with two-way confirmation between the Hospital and BPJS management, especially in determining costing data and advocating to BPJS to review INACBGs rates to be more relevant to current conditions, in order to ensure quality and sustainable health services as an effort to find a balance point in rates that do not harm the Hospital.

The Doctor in Charge of Services must be more accurate in determining patient diagnoses and determining medical procedures for patients and be more careful in writing diagnoses and medical procedures in patient resumes and medical records. For those in charge of medical records and casemix coding officers, BPJS data must be more careful when entering diagnosis codes and action/procedure codes according to ICD-10 to avoid errors that can affect BPJS claims to be lower.

The Hospital further improves HR development through training, especially for Hospital employees who work in the Casemix section so that in calculating costs, the data entered related to finances is free from errors due to human error.

For future researchers

Hospitals should further improve human resource development, especially for hospital employees who work in the Casemix section so that data relating to finance does not occur when calculating costs (prices).

Future researchers should be more careful and thorough in tabulating data so as to minimize the occurrence of coding input errors and other things.

Future researchers should be able to carry out further research not only looking for differences, but also about the factors that influence or are related to the unit cost of clinical pathway-based Bronchopneumonia services, INACBGs rates and hospital rates.

The next researcher should be able to ask for detailed unit cost data from the hospital, so that researchers can find out the calculation of unit costs one by one, not globally.

REFERENCE

Alfajri, N. Z., & Nurmastuti, H. (2017). *Implementasi case management system di rumah sakit.* Gadjah Mada University Press. https://books.google.co.id/books?id=RCCMDwAAQBAJ

Aljunid, S., & Syukri, E. Y. (2020). *Using casemix system for hospital reimbursement in social health insurance program: Comparing casemix system and fee-for-service as provider payment method.* Partridge Publishing Singapore. https://books.google.co.id/books?id=2KIPEAAAQBAJ

Alqahtani, J. (2019). *Effectiveness of using clinical pathways in clinical setting.* https://doi.org/10.13140/RG.2.2.28710.68167

Aspland, E., Gartner, D., & Harper, P. (2021). Clinical pathway modelling: A literature review. *Health Systems, 10*(1), 1–23.

Audimoolam, S., Nair, M., Gaikwad, R., & Qing, C. (2005). The role of clinical pathways in improving patient outcomes. *BMC Medicine, 8*, 31. http://bmcmedicine.biomedcentral.com/articles/10.1186/1741-7015-8-31

Blocher, E. J., Stout, D. E., Juras, P. E., & Smith, S. (2008). *Cost management: A strategic emphasis* (8th ed.). McGraw-Hill Education.

Cooper, R., & Kaplan, R. S. (1998). *The design of management systems.* Prentice Hall.

Croucher, M. (2005). An evaluation of the quality of integrated care pathway development in the UK National Health Service. *International Journal of Care Pathways, 9*(1), 2–10. https://doi.org/10.1177/147322970500900102

Dulang, S. (2022). *Evaluasi efektivitas penerapan integrated clinical pathway terhadap patient health outcomes, length of stay, hospital cost dan 30 days hospital readmission rates di RSUD Labuang Baji Kota Makassar.*

Feuth, S., & Claes, L. (2008). Introducing clinical pathways as a strategy for improving care. *Journal of Integrated Care Pathways, 12*(2), 56–60. https://doi.org/10.1258/jicp.2008.008008

Hansen, D. R., & Mowen, M. M. (2009). *Management accounting.* South-Western College Publishing. https://books.google.co.id/books?id=jXP_dkyA6UUC

Horngren, C. T., Datar, S. M., & Rajan, M. (2008). *Cost accounting: A managerial emphasis.* Pearson.

Kandou, R. D., Arikalang, G. E. E., Nangoy, E., & Mambo, C. D. (2019). Perhitungan biaya satuan (unit cost) berdasarkan clinical pathway.

Kurniyawati, I., & Anjani, M. D. (2019). Analisis penerapan activity-based costing sebagai penentuan tarif jasa rawat inap pada RSUD Ngimbang Lamongan tahun 2018. *Jurnal Riset Akuntansi Aksioma, 18*(2).

Manaor, A. (2020). Penetapan tarif rawat inap berdasarkan analisis unit cost, ability to pay dan willingness to pay di RSUD Wamena.

Marrelli, A. F., Tondora, J., & Hoge, M. A. (2005). Strategies for developing competency models. *Administration and Policy in Mental Health, 32*(5–6), 533–561. https://doi.org/10.1007/s10488-005-3264-0

Maryati, W., Othman, M. F., Musyarofah, S., Listyorini, P. I., Aryanti, F. D., & Jannah, M. (2021). Disparities in hospital cost and INA-CBGs tariff with unit cost analysis of inpatient services. *Proceeding of International Conference on Science, Health, and Technology*, 100–104.

Nikmah, U. (2023). Studi komparasi activity-based-costing & time-driven-activity-based-costing dalam meningkatkan kinerja: Sebuah tinjauan literatur. *Jurnal Bisnis dan Akuntansi, 25*(1). http://jurnaltsm.id/index.php/JBA

Permenkes. (2023). *Peraturan Menteri Kesehatan No. 3 Tahun 2023 tentang standar tarif pelayanan kesehatan dalam penyelenggaraan jaminan kesehatan.*

Rachmat. (2021). Perhitungan unit cost dengan metode activity-based costing.

Raymond, T. (2020). *Penerapan activity-based cost dalam menghitung unit cost perlayanan di rumah sakit.* Multi Value Plus Jogja. https://books.google.co.id/books?id=nOPyDwAAQBAJ

Riza, R. C., & Nurwahyuni, A. (2019). The implementation and outcome of clinical pathway: A systematic review. *Promoting Population Mental Health and Well-Being*, 677–686. https://doi.org/10.26911/theicph.2019.05.33

Samryn, L. M. (2015). *Pengantar akuntansi, buku 1, edisi IFRS.* PT RajaGrafindo Persada.

Setiati, S., Alwi, I., Sudoyo, A., Simadibrata, M., Setiyohadi, B., & Fahrial, A. (2015). *Buku ajar ilmu penyakit dalam* (6th ed., Vols. 1–3). PAPDI.

Subekti, Y., & Nurwahyuni, A. (2019). Effect of clinical pathway on length of stay and hospital cost: A systematic review. *Strengthening Hospital Competitiveness to Improve Patient Satisfaction and Better Health Outcomes*, 556–564. https://doi.org/10.26911/the6thicph-FP.04.43

Sumiati, H., Witcahyo, E., & Ramani, A. (2019). Analisis biaya satuan (unit cost) dengan metode activity-based costing (ABC) di poliklinik jantung RSU Dr. H. Koesnadi.

Wardati, Y., Sinuraya, R. K., Kusuma, A. S. W., Subarnas, A., Diantini, A., & Suwantika, A. A. (2023). Cost-minimization analysis of pneumonia treatment in Indonesia. *Pharmacia*, *70*(2), 391–394.

Waters, H., Abdallah, H., & Santillán, D. (2001). Application of activity-based costing (ABC) for a Peruvian NGO healthcare provider. *International Journal of Health Planning and Management*, *16*, 3–18.

Zander, K., Bower, K. A., & Etheredge, M. L. S. (1987). *Nursing case management: Blueprints for transformation.* New England Medical Center Hospitals.