



ANALYSIS OF ACTIVITY BASED COSTING (ABC) CALCULATIONS IN SERVICES HEMODIALYSIS

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ABSTRACT

Hemodialysis is a kidney replacement therapy where blood from outside the body is filtered by a machine. The provision of hemodialysis services currently still uses the old rates and is considered not to provide profits for hospitals, so good calculations are needed as a form of efficiency in financing hemodialysis procedures in hospitals, especially in the JKN era. Hospitals will receive comprehensive information on shopping costs, unit cost calculations and action suggestions in accordance with applicable rates. The study was carried out with the aim of finding out the unit cost rates for hemodialysis services in the Kudungga Regional Hospital Dialysis Unit using the Activity Based Costing (ABC) method and comparing them with INA-CBGs rates and hospital rates. This research uses a descriptive and quantitative approach. Unit costs for dialysis units and cost analysis using the Activity Based Costing (ABC) method approach are the main subjects of this research. This research is based on all financial balance data for hemodialysis services at the Kudungga Regional Hospital Dialysis Unit. The unit cost of hemodialysis can be determined by tracing the costs related to the hemodialysis cost center as a production center and other elements that support this action. The data will be grouped into fixed costs, semi-variable costs and variable costs, then included in direct costs, indirect costs, overhead and unit cost calculations using the Activity Based Costing (ABC) method. The research results show that the unit cost calculation for hemodialysis based on the Activity Based Costing (ABC) method is IDR 1,397,627.79. Meanwhile, the Kudungga Regional Hospital rate is only IDR 1,258,300, the hospital rate only meets 90.03% of the unit cost using the ABC method. Meanwhile, when compared with the INA-CBGs tariff, which is IDR 921,300, the INA-CBGs tariff only meets 65.92% of the unit cost using the ABC method. Things that influence are direct costs, indirect costs and the number of hemodialysis procedures.

Keywords: activity based costing; hemodialysis; INA-CBGs; unit cost

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INTRODUCTION

One of component important in implementation National Health Insurance (JKN) is financing health. Financing objectives health is for increase efficiency, patient - centered care, improvement quality, and work the same team. Requirements and goals implementation payment health also affects choice mechanism financing. System financing *prospective* is worthy choice Because can limit service health is not truly required or not enough utilized, simplify administration for needs claim, and give incentive to provider service for apply control cost.

Indonesia Renal Registry (IRR) data for 2018 shows that as many as 8 % of patients underwent hemodialysis experience disturbance kidney acute and 92% of patients experience disturbance kidney chronic. Amount patient new and active who are undergoing hemodialysis Keep going increase for five years JKN has been running. There were 66,433 patients new

and 132,142 patients active. There is enhancement significant in amount operation hemodialysis is performed every the year; in 2017, there were 1,694,432 treatments carried out; in 2018, there were 2,754,409 procedures performed.

In the Regency East Kutai itself also experienced this improvement case patient fail kidneys in need handling hemodialysis. At the moment there are 2 houses sick that can be give service hemodialysis namely RS. Meloy and Kudungga Regional Hospital. As House Sick referral in East Kutai, Kudungga Regional Hospital has offer maintenance hemodialysis to patients who need it. Kudungga Regional Hospital own financing hemodialysis amounting to IDR 1,258,300, meanwhile INA-CBGs tariff is IDR 921,300 as RS type B. As a result, there is difference negative amounting to IDR 337,000 between tariff House Sick with INA-CBGs package for service possible hemodialysis impact on costs budget hospital. Service hemodialysis at Kudungga Regional Hospital given with old rates and no use technique *Activity Based Costing* (ABC). Dialysis unit estimated no give profit or profit against income hospital. For That need analysis calculation cost unit service hemodialysis in the Dialysis Unit. Research purposes This is for know tariff *unit costs* to service hemodialysis at the Kudungga Regional Hospital Dialysis Unit with use method *Activity Based Costing* (ABC) and compared with INA-CBG's rates as well tariff house Sick.

METHOD

Study will carried out at the Dialysis Unit of Kudungga Regional Hospital Regency East Kutai in November 2023 until with February 2024. Study This use approach descriptive and characteristic quantitative. In research quantitative, processed data in a way numeric for produce organized information. Characteristics study aim for gather characterizing information something thing, event, or circumstances. Cost Kudungga Regional Hospital Dialysis Unit and analysis cost with approach modify *Activity Based Costing* (ABC) to become subject main study this. Cost unit hemodialysis can is known with browse related costs with center cost hemodialysis as center production and other supporting elements action the.

Whole balance sheet finance service hemodialysis at the Kudungga Regional Hospital Dialysis Unit 2023 will be made as population and sample study. Temporary information from the patient billing system and the INA-CBGs application will become data sources used in study This. Information addition collected through observations and interviews with know the RSUD staff procedures and associated costs with hemodialysis in a dialysis unit. This research is based on all balance sheet data finance service hemodialysis at the Kudungga Regional Hospital Dialysis Unit from January arrives with month December 2023. Building information, non-medical and medical equipment, consumable medical supplies, electricity, water, telephone / wifi prices, staff salaries, and maintenance costs are all included in this report. The *Activity Based Costing* (ABC) cost analysis approach will be used temporarily. Tracked expenses, both direct and indirect (i.e. from support units) are used. Direct costs are costs that are directly related to officers. Indirect costs are calculated by determining category cost that is group cost incurred from action hemodialysis and the activities that occur in each group identified and assigned costs activity services on each activity . This research has received ethical feasibility approval from the Health Research Ethics Commission of the Faculty of Medicine, Mulawarman University, Samarinda with letter number No. 44/KEPK-FK/III/2024

RESULT

In calculating unit costs using the *Activity Based Costing* (ABC) method for the Dialysis Unit, there are four part main underlying namely: associated costs with power Work covers wages principal, allowances, insurance health, and other fees paid by members staff working in dialysis units; related costs with equipment including equipment office and furniture, as well

inventory and shrinkage equipment used in units; associated costs with room including maintenance and repair building as well as shrinkage building; and associated costs with service including purchase equipment, electricity, water, telephone/wifi, and laundry. As for steps calculation cost unit is with determine cost direct as depicted in the table following:

Table 1.

Direct Tracing of Hemodialysis Actions in the Dialysis Unit

Category Cost	Unit	Amount ^a	Cost Unit (Rp) ^b	Amount (Rp) ^c
Registration	Activity	1	8,000.00	8,000.00
Service Hemodialysis	Activity	1	432,400.00	432,400.00
Nacl infusion 500 ml	Kolf	2	10,075.00	20,150.00
Onemed hemodialysis set	Pcs	1	40,600.00	40,600.00
Macro set infusion otsu	Pcs	1	11,350.00	11,350.00
Non- sterile hand sanitizer fleximed	Pcs	1	2,700.00	2,700.00
Medical mask	Pcs	1	500.00	500.00
Material is out use (cotton alcohol gauze and plaster)	Pcs	2	5,000.00	10,000.00
Total				525,700.00

Note: a = quantity unit b = price unity c = Total cost

In accordance table 4.26, is known cost direct from action / procedure hemodialysis worth IDR 525,700 which includes registration, action hemodialysis (services service nurses and doctors), medical equipment and materials medical finished use patient.

Table 1.

Cost Kudungga Regional Hospital Non- Functional Unit Services

Indirect Resources Overhead	Cost Driver	Cost (Rp)
Labor Related		
Cost Employee / Officer	Qty Employee	7,054,513,695
Equipment Related		
Medical Equipment Costs (Furniture and Office Equipment)	Working hours	207,366,846
Cost Maintenance of Non- Medical Equipment	Working hours	10,440,000
Space Related		
Cost Building Repair and Maintenance	Floor area	109,051,786
Cost Depreciation / Depreciation of Office Buildings	Floor area	222,401,874
Service Related		
Cost Procurement of Office Stationery	Working hours	230,328,000
Electricity cost	Kwh	27,885,753
Water Costs	Cubic	867,300
Cost Telephone	Working hours	8,484,000
TOTAL		7,871,339,254

Table 2 shows the total costs *overheads* source Power No Kudungga Regional Hospital directly amounting to IDR 7,871,339,254. Costs the furthermore charged to functional units House Sick based on comparison of total income House Sick during One year to the total revenue of the Dialysis Unit.

Table 3.

2 Basis of Charging to Kudungga Hospital Indirect Resource Overhead Costs in 2023

Information	Cost (Rp)
Kudungga Hospital Total Income	61.711.973.440.76
Dialysis Unit Entry	2,024,522,800
Proportion	3.28%
Total Cost of <i>Indirect Resources</i>	7,871,339,254
Cost <i>Indirect Resources</i> Dialysis Unit ^(a)	258.227.129.98
Cost <i>Indirect Resources</i> ^(b)	117.589.77

(a) Cost of *Indirect resources* Dialysis Unit = cost of *Indirect Resources*
 (b) patient hemodialysis during a year (2,196)

Is known cost source Power No directly to the dialysis unit amounting to Rp. 258,227,129.98 based on table on. Amount the calculated with multiply proportion of 3.28% to total costs *overheads* source No straight away, that is If charged to each patient hemodialysis then the total cost is Rp. 117,589.77.

Table 4.

Direct Resource Overhead Costs at Kudungga Regional Hospital in 2023

Direct Resources Overhead	Cost Driver	Cost (Rp)
Labor Related		
Cost Employee / Officer	Amount employee	1,808,345,651
Equipment Related		
Cost Depreciation Dialysis Unit Inventory	Working hours	215,272,346
Space Related		
Cost Maintenance. repair	Floor area	22.521.564.55
Cost Depreciation of Dialysis Unit Building	Floor area	45,930,822
Service Related		
Cost Procurement of Medicines/ Alkes and Medical BHP	Number of Patients	1,608,789,600
Cost Procurement of Non- Medical Equipment and BHP	Number of Patients	2,778,600
Electricity cost	Kwh	26,063,982
Water Costs	Cubic	3,162,120
Cost Telephone	Working hours	2,400,000
Laundry Fees	Number of Patients	13,332,000
Total		3,748,596,685

Table 4 above show that burden Dialysis Unit costs at source Power direct amounting to IDR 3,748,596,685. As for costs employees, costs tool health and maintenance borne by the government because of Kudungga Regional Hospital is House Sick district/government area. So next calculation *direct resources* will focuses on *service related* or cost operational direct from action hemodialysis. The results obtained in total *service related* is amounting to IDR 1,656,526,302, *overhead* source Power direct represented by a value this. After that, every patient will worn cost *overheads* source Power direct as shown in the table following:

Table 5.

Basis of Loading To Cost *Overhead* Direct Resources Kudungga Regional Hospital Year 2023

Information	Cost (Rp)
Total Cost of Direct Resources	1,656,526,302
Cost Direct Resources per patient *	754.338.02

* Direct Resources costs per patient: Cost Total Direct Resources shared amount patient hemodialysis during a year (2,196)

Table 5 it can be concluded that cost *overheads* source Power directly to the Dialysis Unit is amounting to IDR 1,656,526,302. If amount This applied to each patient, or shared with total number of patients hemodialysis handled by the Dialysis Unit in a year (2,196), then the total cost per patient is IDR 754,338.02.

Table 6.

Total Costs *Overhead* Dialysis Unit at Kudungga Regional Hospital Year 2023

Cost <i>Overheads</i> Indirect Resources	Cost <i>Overheads</i> Live Resources	Amount Cost <i>Overheads</i>
117,589.77	754,338.02	871,927.79

Table 6 shows that cost *overheads* for source Power No direct amounting to IDR 117,589.77, meanwhile cost *overheads* For source Power direct amounting to IDR 754,338.02 and costs *overheads* amounting to IDR 871,927.79.

Table 7.

Costs Kudungga Regional Hospital Dialysis Unit Year 2023

Structure Cost	Cost (Rp)
Cost Directly in the Dialysis Unit (<i>Direct Tracing</i>)	525,700.00
<i>Indirect Resources Overhead Costs</i>	117.589.77
<i>Direct Resources Overhead Costs</i>	754.338.02
Total	1,397,627.79

From table 7 above obtained calculation of unit cost of services hemodialysis at the Kudungga Regional Hospital Dialysis Unit with use technique / method *Activity Based Costing* (ABC), namely i worth IDR 1,397,627.79.

Table 8.
Comparison between *Unit Cost ABC* hemodialysis with rates for Kudungga Regional Hospital and INA-CBGs in 2023

No	Information	Value (Rp)	%
1	Hemodialysis Unit Cost ABC method	1,397,627.79	
2	Kudungga Regional Hospital rates	1,258,300	90.03
3	INA-CBGs rates	921,300	65.92

Table 8 shows that Kudungga Regional Hospital rates meet 90.03% of *unit costs* hemodialysis after calculated with method *Activity Based Costing*. This matter show that tariff House Sick Still more low compared to the specified unit cost with the *Activity Based Costing* Method. Temporary that if compared to with INA-CBGs rates, BPJS has bear 65.92% of costs service hemodialysis at Kudungga Regional Hospital through INA CBGs package. At Kudungga Regional Hospital, the INA CBGS rate is for service hemodialysis is IDR 921,300, with type class B. In other words, the INA-CBGs rate is more small compared to results calculation *unit costs* with ABC technique.

DISCUSSION

Cost Analysis Unit Service Hemodialysis

Determination expenditure to in three category that is cost fixed, *semi-variable*, and *variable* is step First in count cost unit. Cost beginning acquisition buildings, equipment health, and non-medical equipment entered in calculation cost still. Cost acquisition This determined with use method *Annualized Invention Cost* (AIC). High AIC of non-medical devices because cost procurement non-medical devices relatively more Lots Good from type nor the amount compared to buildings and tools medical. Still at least amount machine hemodialysis in the Dialysis Unit moment this is just amount 4 units influence the size of the AIC of the Dialysis Unit.

Calculation nature costs *semi-variable*, or something in between cost fixed and costs *variable*. Expenditure journey service and training, salary staff, and incentives is a number of expenditure the largest *semi-variable*. Dialysis Unit have burden sufficient salary big amounting to IDR 1,760,032,277 for his staff. Dialysis Unit Officer Still have cost relative training cheap. This matter happen because company / party third that provides equipment pay part big related expenses with training officer. Whereas For cost repair building and maintenance tool medical nor non- medical devices No too tall remember usage Dialysis Unit building Still spelled out new and calibrated machine hemodialysis is also still ongoing become not quite enough answer from party provider tool.

Based on results calculation cost *cost variables* consisting of on the costs for BMHP, ATK, water, electricity, telephone and laundry are known biggest cost is BMHP financing, namely worth IDR 1,608,789,600. Selected BMHP brand House Sick be one possible *variables* assessed and adjusted with price high base these, as well purchase of BMHP in form package so that when there are items that do n't used by patients or there is remainder. Calculation of total costs show that magnitude wages employees, costs training, and travel service both in office units and Dialysis Unit contribute to total costs largest in the category cost *semi variable* 1 that is worth IDR 9,008,710,697 (76%). Then on to costs *variable cost*, namely amounting to IDR 2,100,430,155 (18%) came from from big BMHP costs in the Dialysis Unit as well as ATK in the Office Unit. Then finally on costs *fixed costs* ie amounting to IDR 687,133,887 (6%), the amount cost originate from relative AIC value of non-medical devices big compared to building AIC and equipment AIC medical. This matter influenced by procurement many non-medical tools Good from type nor the amount. Still at least amount machine hemodialysis in the Dialysis Unit influence Dialysis Unit AIC value. Whereas the total cost based on center cost exists in non- functional units or office that is amounting to

IDR 7,871,339,254 (67%) and for the Dialysis Unit amounting to IDR 3,924,935,485 (33%). Need exists evaluation and effort do efficiency to sources cost on.

Comparing Service Rates Hemodialysis Using *the Activity Based Costing (ABC) Method*

Activity Based Costing Method share expenditure into two categories: costs *overheads* source Power direct and cost *overheads* source Power No direct. Expenditure largest source overhead Power No direct covers wages worker office, purchasing non-medical equipment, maintenance, and expenses operational other. As for salary employees, non-medical equipment and maintenance sourced from government because of Kudungga Regional Hospital is House Sick regency or owned by government area. While p exists cost *direct resources overhead*, costs that have mark biggest there are costs *Service Related*. Cost This become tall Because mark procurement Relative BMHP high and limited machine operating hemodialysis, so service hemodialysis Still not optimal. For streamline cost service related need done enhancement utilization from all facilities and infrastructure in the Dialysis Unit, namely with method more selective in BMHP brand selection, add amount machine hemodialysis as well as add service shifts hemodialysis which was initially two shifts with day Sunday holiday into 2 shifts each the day including on the day Sunday nor day holiday other.

Findings studies This possible We For compare tariff calculation cost unit used approach *Activity Based Costing (ABC)* with tariff House pain and INA-CBG rates with method following:

1. *Unit cost* rate for *the Activity Based Costing (ABC)* approach is IDR 1,397,627.79, the rate for Kudungga Regional Hospital amounting to IDR 1,258,300, and rates hemodialysis at INA-CBG is IDR 921,300.
2. As for the difference between tariff *unit cost* / costs calculated units use method *Activity Based Costing (ABC)* with tariff House Sick is IDR 139,327.79. Difference This happen because method calculations used different, where calculation tariff *unit costs Activity Based Costing (ABC)* method is used more calculations detailed based on activity action hemodialysis That alone, meanwhile tariff House Sick Still use calculation *conventional* with adapt tariff service health at home Sick around.
3. However there is difference amounting to Rp. 476,327.79 between tariff INA-CBG hemodialysis Rp 921,300 and calculations *unit cost* with method *Activity Based Costing (ABC)* of Rp 1,397,627.79. Hospital called Still Not yet Can reach profit from treatment hemodialysis because 99.8% of patients received it treatment the is JKN participants. Unit cost technique *Activity Based Costing (ABC)* and INACBG rates are different Enough big; in a way specific, rates INA-CBG's hemodialysis is more low compared to *unit costs ABC* method.

CONCLUSION

The following data obtained based on findings study: 1)Cost unit / *unit cost* hemodialysis at Kudungga Regional Hospital Regency East Kutai is counted with method *Activity Based Costing (ABC)* is amounting to IDR 1,397,627.79. 2)Difference INA-CBG's rates with unit cost method *Activity Based Costing (ABC)* on procedures hemodialysis at Kudungga Regional Hospital Regency East Kutai namely amounting to IDR 476,327.79. This matter show that INA-CBG's rates are more low If compared to with calculation *unit costs* incurred with method *Activity Based Costing (ABC)*. 3)Cost unit / *Unit cost* method *Activity Based Costing (ABC)* is different with applicable rates previously amounting to IDR 139,327.79 for procedure hemodialysis at Kudungga Regional Hospital Regency East Kutai ; That means tariffs hemodialysis at Kudungga Regional Hospital more low compared to calculated *unit costs* use *Activity Based Costing (ABC)*. 4)*Unit costs* use *Activity Based Costing (ABC)* on actions hemodialysis at Kudungga Regional Hospital Regency East Kutai has higher rates tall compared to tariff hemodialysis based on INACBG's and tariffs House Sick previously.

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