COST RECOVERY RATE OF HOSPITAL TARIFFS AND INA-CBGs REIMBURSEMENT FOR DENGUE HAEMORRHAGIC FEVER (DHF) AT TYPE C HOSPITAL IN INDONESIA

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ABSTRACT

The implementation of Indonesia's Case-Based Groups (INA-CBGs) payment system aims to improve efficiency in hospital financing. However, discrepancies between reimbursement and actual treatment costs remain a significant challenge for hospital financial sustainability. This study aimed to analyze the Cost Recovery Rate (CRR) by comparing hospital tariffs, INA-CBGs reimbursement, and the actual cost of treating Grade I Dengue Haemorrhagic Fever (DHF) patients while identifying factors contributing to cost discrepancies. A qualitative single embedded case study was conducted at a Type C private hospital in Palembang, Indonesia. Secondary financial and clinical data from 35 Class III inpatients with Grade I DHF were analyzed alongside semi-structured interviews with five key informants representing hospital management, clinical services, finance, and the casemix unit. Data were analyzed through document review, cost comparison, CRR calculation, and thematic analysis. The findings revealed differences between the hospital's internal tariff (Rp82,925,300), INA-CBGs reimbursement (Rp69,730,500), and the actual treatment cost (Rp72,479,198). The resulting Cost Recovery Rate (CRR) of 96.21% indicated that INA-CBGs reimbursement was insufficient to fully recover the actual cost of care. The financing gap was influenced by the interaction of several factors, including the package-based INA-CBGs payment mechanism, length of hospital stay, patients' clinical conditions, diagnosis and procedure coding accuracy, adherence to clinical pathways, laboratory and pharmaceutical utilization, and overall hospital resource efficiency. This study demonstrates that financial sustainability under the INA-CBGs system depends not only on reimbursement policies but also on integrated clinical and operational management. Strengthening clinical pathway adherence, documentation and coding accuracy, resource utilization, and cost monitoring may improve hospital financial performance while maintaining the quality and safety of patient care.

Keywords : Cost Recovery Rate; Case-Based Payment System; INA-Cbgs; Dengue Haemorrhagic Fever; Hospital Resource

ABSTRAK

Penerapan sistem pembayaran Indonesia Case-Based Groups (INA-CBGs) bertujuan meningkatkan efisiensi pembiayaan rumah sakit, namun perbedaan antara tarif klaim dan biaya aktual pelayanan masih menjadi tantangan terhadap keberlanjutan finansial rumah sakit. Penelitian ini bertujuan menganalisis Cost Recovery Rate (CRR) melalui perbandingan tarif rumah sakit, tarif INA-CBGs, dan biaya aktual pelayanan pasien Dengue Haemorrhagic Fever (DHF) Grade I, serta mengidentifikasi faktor-faktor yang menyebabkan kesenjangan biaya pelayanan. Penelitian menggunakan pendekatan kualitatif dengan desain studi kasus tunggal embedded pada salah satu rumah sakit swasta Tipe C di Kota Palembang. Analisis dilakukan terhadap data klinis dan keuangan sebanyak 35 pasien rawat inap Kelas III peserta BPJS Kesehatan yang didukung dengan wawancara mendalam terhadap lima informan kunci yang mewakili manajemen rumah sakit, pelayanan klinis, keuangan, dan unit casemix. Analisis data dilakukan melalui telaah dokumen, perbandingan biaya, perhitungan Cost Recovery Rate (CRR), dan analisis tematik. Hasil penelitian menunjukkan adanya perbedaan antara tarif rumah sakit sebesar Rp82.925.300, tarif INA-CBGs sebesar Rp69.730.500, dan biaya aktual

pelayanan sebesar Rp72.479.198. Nilai Cost Recovery Rate (CRR) sebesar 96,21% menunjukkan bahwa pembayaran INA-CBGs belum mampu menutupi seluruh biaya aktual pelayanan. Kesenjangan tersebut dipengaruhi oleh interaksi berbagai faktor, yaitu sistem pembayaran INA-CBGs berbasis paket, lama rawat inap, kondisi klinis pasien, ketepatan coding diagnosis dan prosedur, kepatuhan terhadap clinical pathway, penggunaan pemeriksaan laboratorium dan obat-obatan, serta efisiensi pengelolaan sumber daya rumah sakit. Penelitian ini menunjukkan bahwa keberlanjutan finansial rumah sakit dalam sistem INA-CBGs tidak hanya bergantung pada kebijakan tarif, tetapi juga pada integrasi pengelolaan klinis dan operasional. Penguatan kepatuhan terhadap clinical pathway, peningkatan kualitas dokumentasi dan coding, optimalisasi penggunaan sumber daya, serta evaluasi biaya secara berkala berpotensi meningkatkan efisiensi pembiayaan tanpa mengurangi mutu dan keselamatan pelayanan.

Kata Kunci : Cost Recovery Rate; Case-Based Payment System; INA-Cbgs; Dengue Haemorrhagic Fever; Hospital Resource

INTRODUCTION

Dengue Hemorrhagic Fever (DHF) remains a significant public health issue and places considerable pressure on hospital services, especially in countries with a high incidence of this problem (Gubler, 2008; Organization, 1997; Parveen et al., 2023). Hospital X, a private Type C hospital in Palembang, Indonesia, saw DHF cases increase from 238 in 2020 to 885 in 2024. This rapid increase has led to greater demand on the hospital's resources, including inpatient beds, healthcare staff, laboratory tests, medications, medical supplies, and supporting clinic services. Even those with a mild clinical course, diagnosed with Grade I DHF, usually require hospitalization, intravenous fluids, serial hematologic examinations, and ongoing clinical surveillance, according to the clinical pathway. Previous studies have shown that the length of hospital stay and severity of the disease significantly affect the use of healthcare resources and the balance between hospitalization costs and revenue (Hirani et al., 2025; Huang et al., 2025; Silber et al., 1999) . Furthermore, healthcare infrastructure and hospital operational resources must also meet quality standards, patient safety, and accreditation regulations, increasing the operational resources needed to sustain healthcare costs and expenditures.

In Indonesia, hospital reimbursement under the National Health Insurance (Jaminan Kesehatan Nasional, JKN) system relies on the Indonesian Case-Based Groups (INA-CBGs), a prospective payment system that provides a predetermined package tariff according to diagnosis and severity at the hospital (Andonotopo et al., 2026; Nurwahyuni et al., 2019; Rahayuningrum et al., 2017) . Although this payment method is intended to make hospitals more efficient and cost-reducing, its fixed reimbursement rates do not always offer the benefit of adjusted prices for variable patient clinical diagnoses, length of stay, duration of treatment, diagnostic tests and procedures, drug usage, or changes in hospital operating costs (Darmawan et al., 2025; Maemun et al., 2026) . Thus, variations often arise between the payment of INA-CBGs and the actual costs of medical services (Darmawan et al., 2025) . The Cost Recovery Rate (CRR) is a

fundamental financial metric to determine the reconciliation between hospital revenue and the actual cost of services delivered (Abu Jaber & Nashwan, 2022; N. A. Kurniawan & Rahmah, 2025; Rahayu et al., 2023). A CRR of 100% represents a break-even condition, while values greater than 100% indicate a financial surplus, whereas values less than 100% indicate an under-recovery of costs (Kurniawan & Rahmah, 2025). Using Activity-Based Costing (ABC), Hasan et al. (2025) reported that unit costs calculated through ABC can be higher than reimbursement rates by INA-CBGs, whereas Skarayadi et al. (2025) emphasized that differences between reimbursement tariffs and service costs are a long-standing issue for most Type C hospitals operating in the prospective payment system in Indonesia.

Previous studies mostly conducted quantitative comparisons among hospital tariffs in INA-CBGs reimbursement and the unit cost (Adlia Syakurah et al., 2025; N. A. Kurniawan & Rahmah, 2025; Manasikana et al., 2025; Skarayadi et al., 2025). Nonetheless, very few studies have combined financial performance evaluation through the Cost Recovery Rate (CRR) with managerial opinions on CR, clinical pathway implementation, coding accuracy, and hospital cost control measures in a diagnostic context analysis framework. There is insufficient evidence on Grade I DHF services for Class III inpatients in Type C hospitals, although the diagnosis is a high-volume scenario and represents a low-margin medical scenario. To fill this gap, this present research employs a single embedded case study to analyze hospital tariffs, INA-CBGs reimbursement, actual service costs according to the clinical pathway, and Cost Recovery Rate (CRR). With such an integrated solution, the effectiveness of reimbursement, cost reduction strategies, and financial viability of DHF services at Hospital X Palembang will be better evaluated. Specifically, this study investigates differences in hospital tariffs, INA-CBGs reimbursement, actual service costs, and Cost Recovery Rate among Grade I Dengue Hemorrhagic Fever patients at a Type C private hospital in Palembang, exploring the various reasons underlying the cost discrepancies.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Hospitals within the Healthcare and National Health Insurance System

Hospitals are a fundamental component of the national healthcare system, serving as referral healthcare facilities that provide comprehensive individual health services encompassing promotive, preventive, curative, and rehabilitative care (Aljuaid et al., 2021; Durán & Wright, 2019; Garrick et al., 2019). This role demonstrates that hospitals are not solely responsible for disease treatment but also carry a broader social responsibility to improve population health (Garrick et al., 2019). From a health systems perspective, hospitals are highly complex organizations because they manage diverse resources, including healthcare professionals, financial resources, medical technologies, and health information systems

(Ghiasipour et al., 2017; Mamédio & Meyer, 2020) . Consequently, effective managerial capacity is essential, particularly in cost control, costing system implementation, and the allocation of direct and indirect costs to ensure both high-quality healthcare services and organizational sustainability (Law of the Republic of Indonesia Number 44 of 2009 Concerning Hospitals, 2009; Novianti et al., 2025; Qalam et al., 2024).

The implementation of Indonesia's National Health Insurance (Jaminan Kesehatan Nasional, JKN) has fundamentally transformed hospital financing from a fee-for-service model to a social health insurance system with stricter cost containment mechanisms (Agustina et al., 2025; Dewanto & Siti-Nabiha, 2025). Under this system, hospitals function both as healthcare providers and as contractual partners of BPJS Kesehatan, with their revenues largely determined by the Indonesian Case-Based Groups (INA-CBGs) reimbursement mechanism (Agustina et al., 2025; Manasikana et al., 2025) . Although diagnosis-related payment systems such as DRG/CBG are designed to promote efficiency, discrepancies between INA-CBGs reimbursement rates and the actual cost of healthcare services may impose significant financial pressure on hospitals (Darmawan et al., 2025) . Therefore, hospitals must strengthen their managerial adaptability by monitoring financial performance indicators, including the Cost Recovery Rate (CRR), to evaluate the extent to which reimbursement adequately covers the actual unit cost of specific diagnoses (Firdaus & Ramadhan, 2024; Tabrany, 2014).

Hospital Tariffs and Unit Cost of Healthcare Services

Hospital tariffs represent the monetary charges assigned to healthcare services and serve as the basis for valuing services delivered to patients (Mosadeghrad et al., 2020; Waters & Hussey, 2004) . Within Indonesia's National Health Insurance (JKN) system, hospital reimbursement is conducted through the prospective Indonesian Case-Based Groups (INA-CBGs) payment system, in which payments are standardized according to diagnosis classifications and medical procedures (Busse et al., 2013; Ministry of Health Republic of Indonesia, 2023; Yuspita Widiyaningrum & Martien Agustian, 2023).

The determination of hospital tariffs should consider actual service costs (unit costs), healthcare financing policies, and patients' ability to pay. Rational tariff-setting is essential to maintain an appropriate balance between service accessibility, quality of care, efficiency, equity, and hospital financial sustainability (Ministry of Health Regulation Number 3 of 2023 Concerning Health Service Tariff Standards in the Implementation of the National Health Insurance Program, 2023) . Unit cost reflects the actual expenditure incurred by hospitals in delivering healthcare services, including both direct and indirect costs (Barker et al., 2023; Krupová et al., 2025; Sousa et al., 2023).

For Dengue Haemorrhagic Fever (DHF) services, calculating unit costs based on the clinical pathway is particularly valuable because it links standardized clinical management with resource utilization. Differences among hospital tariffs, INA-CBGs reimbursement rates, and actual unit costs may substantially affect hospitals' financial performance. Consequently, Cost Recovery Rate (CRR) analysis provides an important measure of whether reimbursement revenue is sufficient to cover actual service costs while also serving as an indicator for evaluating tariff adequacy and hospital efficiency strategies (Firdaus & Ramadhan, 2024; Manasikana et al., 2025; Rahayu et al., 2023).

The INA-CBGs Payment System

The Indonesian Case-Based Groups (INA-CBGs) system is the prospective payment mechanism used by BPJS Kesehatan to reimburse secondary and tertiary healthcare providers for healthcare services grouped according to diagnosis and medical procedures (Gumilang & Sulaeman, 2025; N. A. Kurniawan & Rahmah, 2025). The reimbursement package is intended to cover all hospital resources utilized during patient care, including both medical and non-medical components (Igusti et al., 2025; Rachmawaty et al., 2026).

Under the National Health Insurance (JKN) system, hospitals receive predetermined reimbursement for each case according to diagnosis classification and expected resource consumption (Nasruddin & Ningsi, 2025; Setiawan et al., 2022) . Conceptually, case-based payment systems are designed to encourage efficiency and cost containment while simultaneously transferring part of the financial risk from the payer to healthcare providers. Consequently, the effectiveness of the INA-CBGs system depends heavily on the alignment between package tariffs, case complexity, and actual healthcare costs (Darmawan et al., 2025; Rahayuningrum et al., 2017).

Several studies have reported that INA-CBGs reimbursement does not always reflect hospitals' actual unit costs (Hasan et al., 2025; Skarayadi et al., 2025). In many cases, actual expenditures exceed the reimbursement received, requiring hospitals to implement efficiency and cost-control strategies to maintain financial sustainability, particularly Type C hospitals with relatively limited resources (Couturier et al., 2022; M. D. Kurniawan et al., 2026; Setiawan et al., 2022).

Cost Recovery Rate (CRR)

Cost Recovery Rate (CRR) is a financial performance indicator used to evaluate the extent to which hospital revenue is sufficient to cover the actual cost of healthcare services (Rahayu et al., 2023; Stokes et al., 2022; Yassir et al., 2025) . Within the INA-CBGs reimbursement system, CRR is defined as the ratio between total reimbursement received and the actual unit cost incurred in delivering a particular healthcare service (Hasan et al., 2025;

Manasikana et al., 2025; Rahayu et al., 2023). A CRR value equal to 1 indicates a break-even condition, values greater than 1 indicate a financial surplus, whereas values below 1 indicate that reimbursement is insufficient to recover actual service costs. Therefore, CRR measures not only the difference between reimbursement and expenditure but also the financial sustainability of healthcare services at the diagnosis-specific level (Rahayu et al., 2023; Stokes et al., 2022).

Previous studies consistently demonstrate that discrepancies between INA-CBGs reimbursement and actual unit costs remain a significant challenge in hospital financing (Adlia Syakurah et al., 2025; Aulia & Ayu, 2017; Monica et al., 2021). Aulia & Ayu (2017) reported negative financial margins between actual costs and INA-CBGs claims in Type C hospitals, while (Monica et al. (2021) found that actual treatment costs exceeded INA-CBGs reimbursement for several diagnoses. Similarly, Adlia Syakurah et al. (2025) concluded that INA-CBGs tariffs covered only a portion of actual hospital expenditures for several healthcare services. Within the context of Dengue Haemorrhagic Fever (DHF), CRR analysis is therefore essential for evaluating the alignment among actual unit costs, hospital tariffs, and INA-CBGs reimbursement, particularly in Type C hospitals that must simultaneously maintain operational efficiency, financial sustainability, and service quality.

Dengue Haemorrhagic Fever (DHF) as a Burden on Hospital Services

Dengue Haemorrhagic Fever (DHF) is an infectious disease caused by the dengue virus and transmitted primarily through the bites of *Aedes aegypti* and *Aedes albopictus* mosquitoes (Gubler, 2008; Organization, 1997; Parveen et al., 2023). The disease is characterized by high fever, hemorrhagic manifestations, thrombocytopenia, and the potential development of shock, which can be life-threatening. In Indonesia, DHF remains a major public health concern with consistently high annual incidence rates and represents a substantial burden on hospital services (Jauharotul Ulya et al., 2026; Pakaya et al., 2023) . Clinical management generally requires hospitalization, continuous clinical observation, serial laboratory examinations, patient monitoring, and intravenous fluid therapy following established clinical pathways. Consequently, DHF treatment demands considerable healthcare resources and contributes significantly to hospital operating costs (Ariwardani et al., 2019; Supadmi et al., 2019).

From a hospital financing perspective, DHF is an important diagnosis for economic evaluation because of its high case volume and relatively standardized pattern of resource utilization. Previous studies have identified persistent disparities between INA-CBGs reimbursement and actual treatment costs, indicating that reimbursement often covers only a portion of the resources consumed during patient care (M. D. Kurniawan et al., 2026; Skarayadi et al., 2025) . This situation increases the risk of inadequate cost recovery, particularly in hospitals that lack effective efficiency and cost-control strategies. Therefore, evaluating DHF

services using a clinical pathway-based costing approach is essential to assess the alignment between hospital tariffs, INA-CBGs reimbursement, actual unit costs, and Cost Recovery Rate (CRR). Such evaluation is especially important for Type C hospitals, where limited resources require careful management to ensure both financial sustainability and high-quality patient care (Adlia Syakurah et al., 2025).

RESEARCH METHODOLOGY

This study employed a mixed-methods single embedded case study design, with quantitative financial analysis as the primary analytical component and qualitative evidence used to provide contextual and explanatory insights (Alvianto & Pribadi, 2025; Bonara & Fajar, 2025; Salgado et al., 2010; Shi et al., 2017). The study was conducted at one Type C private hospital in Palembang, Indonesia, which constituted the primary case. Within this case, four embedded analytical units were examined which are (1) the actual unit cost of Dengue Haemorrhagic Fever (DHF) services, (2) hospital tariffs, (3) INA-CBGs reimbursement, and (4) the Cost Recovery Rate (CRR) (Sugiyono, 2022). The quantitative component focused on measuring and comparing the actual costs incurred in providing DHF services with the hospital's internal tariffs and INA-CBGs reimbursement. The actual unit cost was calculated from patient-level service and financial records, while the CRR was calculated to determine the extent to which INA-CBGs reimbursement covered the actual cost of care. These numerical analyses provided the primary basis for assessing the financial adequacy of DHF services. The qualitative component complemented the quantitative analysis by exploring the organizational, clinical, administrative, and managerial factors underlying the observed differences between actual treatment costs and reimbursement. Semi-structured interviews with key hospital personnel and limited non-participant observations were therefore used as contextual and explanatory evidence rather than as the sole basis for analysis (Creswell, 2017). The qualitative findings were integrated with the quantitative results to explain how factors such as length of stay, patient clinical condition, coding accuracy, clinical pathway adherence, laboratory and pharmaceutical utilization, and resource management contributed to the observed financing gap (Curry et al., 2013).

The embedded case study design enabled the four financial components to be examined within the same organizational and healthcare financing context (K. Robert, 2018). Each analytical unit was first examined separately and subsequently integrated to provide a comprehensive explanation of the relationship between service costs, hospital pricing, INA-CBGs reimbursement, and cost recovery. Thus, the study does not treat the qualitative and quantitative components as separate studies. Rather, the qualitative evidence was used to

contextualize and explain the quantitative financial findings within the specific hospital setting (Polit & Beck, 2022). The research framework can be seen in Figure 1.[Figure 1.]

Semi-structured in-depth interviews were conducted with five key informants who were purposively selected based on their roles and involvement in hospital tariff setting and healthcare financing. The participants included the Hospital Director, who was responsible for strategic policy and financial decision-making; a member of the Tariff Team, who was responsible for cost calculation and tariff evaluation; a Casemix Officer, who managed the INA-CBGs reimbursement process; the Head of the Inpatient Department, who oversaw the implementation of clinical pathways and healthcare resource utilization; and an Internal Medicine Specialist, who was responsible for the clinical management of Dengue Haemorrhagic Fever (DHF) patients, including diagnosis, treatment planning, and medical decision-making that directly influenced resource utilization and service costs. To complement the interview data, limited non-participant observations were conducted to obtain a direct understanding of service delivery processes, cost recording procedures, and interdepartmental coordination related to the financing and management of DHF services.

Data Sources and Study Population

The quantitative component utilized secondary clinical and financial data obtained from the Medical Records and Health Information Department and relevant administrative and financial units of type C private Hospital at Palembang. A total of 122 hospitalized patients diagnosed with Dengue Haemorrhagic Fever (DHF) during January–June 2025 was initially identified. Patient selection was subsequently conducted based on predefined inclusion and exclusion criteria.

The inclusion criteria were: (1) patients hospitalized at type C private Hospital at Palembang during January–June 2025; (2) patients with a primary diagnosis of DHF Grade I; (3) patients receiving treatment in Class III wards; (4) patients covered by BPJS Kesehatan; and (5) patients with available service, cost, and claim data for analysis. Patients who did not meet one or more of these criteria were excluded. Based on the screening process, 35 patients met all inclusion criteria. Because all eligible patients within the defined study period were included, the study employed total sampling rather than random sampling. Thus, the final quantitative sample consisted of 35 patients. The restriction to DHF Grade I patients treated in Class III wards and covered by BPJS Kesehatan was intended to obtain a relatively homogeneous group in terms of diagnosis, severity, accommodation class, and financing mechanism. This enabled a more consistent comparison of hospital tariffs, INA-CBGs reimbursement, and actual unit costs.[Figure 2.]

Costing Methodology

The actual unit cost was calculated using an Activity-Based Costing (ABC) approach with a Double Distribution method, consistent with the costing system applied at Type C Private Hospital Palembang (Nurmansyah et al., 2025; Yereli, 2009). The costing process began with the identification of activities involved in patient care, followed by the assignment of costs according to the activities and resources associated with service delivery. Costs incurred by supporting units were subsequently distributed to service units proportionally using the Double Distribution method.

The costing perspective adopted in this study was the hospital/provider perspective. The cost components consisted of direct and indirect costs. Direct costs included physician and healthcare personnel services, pharmaceuticals, medical consumables (BMHP), laboratory examinations, and medical procedures. Indirect costs included operational overheads such as administration, electricity, water, laundry, and facility maintenance. Direct costs were calculated based on the resources utilized in providing services to patients, whereas indirect costs were allocated from supporting units to service units using the Double Distribution method (Yereli, 2009) . Accordingly, the actual unit cost incorporated both directly attributable costs and allocated indirect costs in accordance with the hospital's ABC costing system (Chatterjee et al., 2013; Riewpaiboon et al., 2007) . Operationally, unit cost was calculated using the following formula: Unit Cost = Total Service Cost / Service Units (1)

where: Total Service Cost = Direct Costs + Allocated Indirect Costs (Overhead) (2)

The unit cost represented the actual cost of service provision and did not include a profit margin. It was therefore distinguished from the hospital tariff, which represents the price charged for the service. The resulting unit cost was subsequently used to compare the actual cost of DHF services with the hospital tariff and INA-CBGs reimbursement and to calculate the Cost Recovery Rate (CRR).

Qualitative Data Collection and Analysis

The qualitative component was conducted to provide contextual and explanatory evidence for the quantitative findings concerning the differences between hospital tariffs, INA-CBGs reimbursement, and actual treatment costs (Curry et al., 2013; Lee et al., 2023). Five key informants were purposively selected based on their roles and direct involvement in hospital tariff determination, healthcare financing, clinical service delivery, inpatient resource utilization, and INA-CBGs reimbursement. The informants consisted of the Hospital Director, a member of the Tariff Team, a Casemix Officer, the Head of the Inpatient Department, and an Internal Medicine Specialist.

Semi-structured in-depth interviews were conducted individually through one-on-one interviews, with each interview lasting approximately 30–60 minutes. The interviews focused on the factors that could explain the differences between actual treatment costs and INA-CBGs reimbursement (Hanna et al., 2023; Muchtiar et al., 2026a). The interview guide covered several domains, including (1) hospital tariff determination and cost calculation, (2) INA-CBGs reimbursement and claims administration, (3) patient clinical conditions and length of stay, (4) diagnosis and procedure coding, (5) adherence to clinical pathways, (6) laboratory and pharmaceutical utilization, and (7) hospital resource management and cost efficiency.

The qualitative data were analyzed using the interactive model of data analysis developed by (Hashimov, 2015; Jenkins et al., 2018). The process consisted of three main stages: data reduction, data display, and conclusion drawing/verification. Data reduction involved selecting, focusing, simplifying, and organizing information obtained from interviews, observations, and relevant documents (Nicmanis, 2024; Watkins, 2017). The reduced data were then displayed in an organized form to facilitate identification of patterns and relationships among the emerging findings. Finally, conclusions were drawn and verified by comparing the qualitative evidence with information obtained from other data sources and with the quantitative financial findings. This approach was selected because it allows the analysis to proceed dynamically throughout the data collection and interpretation process.

In addition to interviews, limited non-participant observations were conducted to obtain contextual information concerning DHF service delivery, cost recording procedures, clinical pathway implementation, and coordination among relevant hospital units. Observation findings were documented as field notes focusing on relevant activities, procedures, and interactions related to service delivery and resource utilization. The observations were used as complementary contextual evidence rather than as a basis for calculating the financial variables.

Document analysis was conducted using relevant clinical, financial, tariff, and INA-CBGs-related records. The documents were reviewed to obtain information concerning patient characteristics, healthcare services provided, resource utilization, treatment costs, hospital tariffs, and reimbursement. Quantitative information obtained from these documents was used in the financial analysis, whereas relevant qualitative information concerning service processes, documentation, coding, and resource management was used to contextualize the interview findings.

The information obtained from interviews, observations, and document analysis was compared during the analysis process. Findings that converged across sources were used to strengthen the interpretation, while differences between sources were examined in relation to the specific context of the hospital. The qualitative findings were subsequently integrated with

the quantitative results. The quantitative analysis established the magnitude of the difference between actual treatment costs and INA-CBGs reimbursement, while the qualitative evidence provided contextual explanations for the factors contributing to the observed financing gap.

RESULT AND DISCUSSION

Based on the patient characteristics, the length of hospital stay (LOS) for patients diagnosed with Grade I Dengue Haemorrhagic Fever (DHF) ranged from 3 to 9 days, with an average hospitalization period of 4–5 days. Variations in the length of stay were primarily associated with patients' clinical conditions, platelet count recovery, and response to treatment. Patients whose platelet counts had not yet stabilized required prolonged observation and repeated laboratory monitoring, particularly platelet, hematocrit, and hemoglobin examinations, resulting in longer hospitalization. The standard treatment consisted mainly of intravenous fluid therapy and symptomatic medications to maintain hemodynamic stability and support patient recovery. The findings further indicate that pharmaceuticals and laboratory examinations constituted the largest components of the actual treatment cost, reflecting the importance of continuous clinical monitoring and supportive therapy in the management of Grade I DHF patients. A summary of patient characteristics is presented in Table 1. [Table 1]

Five key informants participated in this study, representing different functional roles within the hospital, including hospital management, the attending physician, the hospital tariff team, the casemix unit, and the inpatient nursing department. These informants were purposively selected based on their direct involvement in hospital tariff determination, clinical service delivery, and healthcare financing management. The characteristics of the study informants are presented in Table 2.[Table 2]

Analysis of Hospital Tariffs and INA-CBGs Reimbursement for Dengue Haemorrhagic Fever (DHF) Services

Document analysis revealed differences between the hospital tariffs and the INA-CBGs reimbursement rates for the treatment of patients with Grade I Dengue Haemorrhagic Fever (DHF) admitted to Class III wards. The comparison indicates that the hospital's internal tariff structure differs from the standardized reimbursement rates established under the INA-CBGs payment system. The detailed comparison between hospital tariffs and INA-CBGs reimbursement rates is presented in Tables 3a and 3b. [Table 3a] [Table 3b]

As presented in Tables 3a and 3b, the total hospital tariff for Grade I Dengue Haemorrhagic Fever (DHF) services was Rp82,925,300, exceeding the total INA-CBGs reimbursement of Rp69,730,500. The largest cost components were room charges, laboratory examinations, and pharmaceuticals. These findings indicate a discrepancy between the hospital's

service tariffs and the standardized reimbursement provided under the INA-CBGs payment system.

The comparison between the actual unit cost and the INA-CBGs reimbursement revealed an overall deficit of Rp2,748,698, resulting in a Cost Recovery Rate (CRR) of 96.21%. This indicates that the INA-CBGs reimbursement covered 96.21% of the actual treatment costs, while the remaining 3.79% was absorbed by the hospital. The unit cost per patient varied considerably, ranging from Rp999,773 to Rp4,804,834, reflecting differences in the length of hospital stay, laboratory utilization, medication use, medical procedures, and patients' clinical conditions. Across all cases, the largest cost components were pharmaceuticals, laboratory examinations, and room charges.[Table 4]

As presented in Table 4, the hospital tariff exceeded both the actual unit cost and the INA-CBGs reimbursement for Grade I Dengue Haemorrhagic Fever (DHF) services. Unlike the unit cost, which represents the actual cost incurred in delivering healthcare services, the hospital tariff incorporates additional components such as operational expenses, indirect costs, internal pricing policies, and institutional margins. Consequently, the unit cost provides a more appropriate basis for evaluating financing efficiency through the Cost Recovery Rate (CRR).

The comparison further demonstrated that the INA-CBGs reimbursement remained lower than the actual unit cost, resulting in a financing deficit of Rp2,748,698 and a CRR of 96.21%. This indicates that the INA-CBGs reimbursement covered 96.21% of the actual treatment costs, while the remaining 3.79% was borne by the hospital.

These quantitative findings were further explored through in-depth interviews with five key informants to better understand the factors contributing to the observed discrepancy between the actual treatment costs and the INA-CBGs reimbursement. The interview findings are summarized in Table 5.[Table 5]

The integration of the document analysis and in-depth interviews with the five key informants identified seven major factors contributing to the discrepancy between hospital tariffs, INA-CBGs reimbursement, and the actual cost of providing Grade I Dengue Haemorrhagic Fever (DHF) services. These factors include the INA-CBGs payment system, patients' clinical condition, length of hospital stay, accuracy of diagnosis and procedure coding, adherence to the clinical pathway, utilization of laboratory examinations and pharmaceuticals, and the efficiency of hospital resource management.

Among these factors, patients' clinical condition and the length of hospital stay emerged as the most influential, as they were associated with increased utilization of inpatient accommodation, healthcare personnel, medications, laboratory examinations, and other supporting services. In addition, the accuracy of diagnosis and procedure coding and

compliance with the established clinical pathway were found to influence reimbursement claims and the consistency of healthcare service delivery. Pharmaceuticals and laboratory examinations also represented the largest cost components identified in the cost analysis.

The findings indicate that the observed gap between the actual cost of care and INA-CBGs reimbursement reflects the interaction of clinical, administrative, and managerial factors. Accordingly, the Cost Recovery Rate (CRR) of 96.21% should be interpreted as the combined outcome of these interrelated factors rather than because of the reimbursement system alone. The integrated relationship among these factors is illustrated in Figure 3. [Figure 3]

INA-CBGs Payment System

The findings from the document analysis and in-depth interviews indicate that the package-based INA-CBGs reimbursement system is a key factor contributing to the discrepancy between the actual cost of care and hospital reimbursement for Grade I Dengue Haemorrhagic Fever (DHF) services. Informant 1 explained:

"The INA-CBGs financing system is based on a fixed package, whereas the patients we treat every day vary considerably. Patients may be children or adults, resulting in differences in the use of medical consumables, intravenous fluids, and medication dosages. However, the INA-CBGs reimbursement for DHF remains the same."

This perspective was reinforced by Informant 4, who noted that reimbursement is predetermined according to disease categories:

"INA-CBGs reimbursement is determined based on the disease category, and the package has already been established."

The informant further explained that hospitals have limited authority to determine reimbursement values because the final claim amount is subject to adjustments made by BPJS Health. Informant 1 also emphasized that age-related differences influence healthcare resource utilization, stating that adult patients generally require greater quantities of medical consumables than pediatric patients, despite receiving the same INA-CBGs reimbursement.

These findings suggest that the standardized package-based reimbursement mechanism does not fully account for variations in patient characteristics, including age, clinical condition, therapeutic response, and healthcare resource utilization within the same diagnosis group. Consequently, hospitals may incur higher treatment costs without receiving proportional reimbursement. This observation is consistent with the quantitative findings of the present study, which showed that the total actual unit cost (Rp72,479,198) exceeded the total INA-CBGs reimbursement (Rp69,730,500), resulting in a Cost Recovery Rate (CRR) of 96.21%. Although the reimbursement covered most treatment costs, approximately 3.79% of the actual expenditure

remained the responsibility of the hospital, indicating that the current payment mechanism did not fully compensate for the resources consumed during patient care.

These findings are consistent with those reported by Kurniawan et al. (2026) and Skarayadi et al. (2025), who found that prospective case-based payment systems may generate discrepancies between standardized reimbursement and actual hospital costs because patients with the same diagnosis often require substantially different levels of healthcare resources. Similar observations have been reported in studies evaluating diagnosis-related group (DRG)-based reimbursement systems, where fixed payment mechanisms improve cost predictability for payers but may inadequately compensate hospitals treating patients with greater clinical complexity or higher resource requirements.

The present findings further suggest that the reimbursement gap cannot be attributed solely to the INA-CBGs payment mechanism. Rather, it reflects the interaction between a standardized external reimbursement system and the heterogeneous clinical characteristics of individual patients. While the reimbursement amount is predetermined according to diagnosis grouping, actual treatment costs continue to vary according to patients' clinical needs and the intensity of services provided. Therefore, understanding the determinants of healthcare resource utilization is essential for explaining the remaining financing gap observed in this study. Among these determinants, the length of hospital stays (LOS) emerged as one of the most influential factors affecting actual treatment costs and is discussed in the following section.

Length of Hospital Stay (LOS)

Consistent with the findings regarding the INA-CBGs payment system, the interview data identified the length of hospital stay (LOS) as one of the most influential determinants of the actual cost of treating patients with Grade I Dengue Haemorrhagic Fever (DHF). Informant 2 explained:

"If the patient's condition has not improved, the patient will naturally remain hospitalized for a longer period, resulting in higher treatment costs."

This observation was supported by Informant 3, who stated:

"Usually, the length of hospital stay is the factor that has the greatest influence."

Similarly, Informant 4 also noted that comorbidities may prolong hospitalization:

"For DHF, a patient who is expected to stay for three days may require five days instead."

Informant 5 further emphasized the financial implications of prolonged hospitalization:

"A patient who would normally stay for four days may require seven to eight days of hospitalization. This affects room charges, physician fees, and the cost of laboratory examinations."

These findings indicate that LOS represents more than the duration of hospitalization; it serves as a proxy for the intensity of healthcare resource utilization. Each additional inpatient day increases the consumption of hospital resources, including accommodation, physician and nursing services, laboratory investigations, pharmaceuticals, and other supportive care. The quantitative findings support this interpretation, demonstrating considerable variation in unit costs among patients despite sharing the same diagnosis group. Such variation largely reflects differences in hospitalization duration and the corresponding intensity of resource utilization.

Under the INA-CBGs reimbursement system, however, payments are determined according to diagnosis groups and severity levels rather than the actual duration of hospitalization. Consequently, increases in treatment costs resulting from prolonged LOS are not necessarily accompanied by proportional increases in reimbursement. This mechanism helps explain the financing gap identified in the present study, where the actual treatment costs exceeded the standardized reimbursement provided through INA-CBGs. Similar findings have been reported by Kurniawan et al. (2026) , Nasruddin & Ningsi (2025) and Skarayadi et al. (2025) , who identified LOS as a major determinant of hospital costs and an important contributor to discrepancies between prospective case-based reimbursement and actual healthcare expenditure.

From a healthcare management perspective, these findings suggest that LOS should be considered not only a clinical performance indicator but also a financial performance indicator, as it directly influences hospital resource utilization and cost efficiency. Nevertheless, prolonged hospitalization should not be interpreted solely as an operational issue. Rather, it is often a consequence of patients' clinical characteristics, including disease severity, comorbidities, and response to treatment. Accordingly, understanding the underlying clinical factors that influence LOS is essential for explaining variations in actual treatment costs. These clinical determinants are discussed in the following section.

Diagnosis and Procedure Coding

The interview findings indicate that the accuracy of diagnosis and procedure coding is a critical factor influencing the alignment between the actual cost of care and INA-CBGs reimbursement. Informant 3 emphasized:

"Accurate coding, as well as physicians' adherence to the clinical pathway, also has an influence."

The implication is that coding accuracy is not only determined by correct ICD diagnosis and procedure codes, but depends also on the completeness and quality of clinical documentation. As such, thorough medical records documenting the principal diagnosis,

comorbidities, complications, and all relevant procedures are imperative for accurately representing the complexity of patient care in the INA-CBGs grouping process.

Undercoding (incomplete or incorrect documentation), where the documented diagnosis or treatment does not capture the clinical complexity of the case. As a result, the case grouping process might allocate a lower reimbursement category than is warranted; such a condition may result in reimbursement which does not properly reflect the resources expended for patient care. This mechanism may account for the financing gap reported in our study, where the actual treatment expenses surpassed the INA-CBGs reimbursement despite participants being of the same diagnosis subgroup.

These results are similar to those described by by Angreni et al. (2026) and Skarayadi et al., 2025) , who found that accurate coding and effective clinical documentation are important for maximizing reimbursement within prospective payment systems. Past studies have also shown that under-reporting of cases through poor clinical documentation and non-accurate coding leads to under-reimbursement and the discrepancy between standardized payment and actual hospital cost.

Diagnosis and procedure coding plays an important role in hospital financial management because it can convert information in clinical practice into reimbursement claims — and it does this primarily through administrative duties. This study's findings thus indicate that coding accuracy is an important link linking clinical practice and hospital financing, leading to better reimbursement with respect to the complexity of healthcare services rendered. However, standardized medical management and complete documentation through the care process is very important for accurate coding. Thus, adherence to well-established clinical pathways serves as a key complement to enhancing both the accuracy of coding and efficient payment.

Clinical Pathway

The interview findings, supported by the document analysis, indicate that adherence to the clinical pathway plays a significant role in determining the cost efficiency of Grade I Dengue Haemorrhagic Fever (DHF) management. Informant 1 explained:

"Some healthcare professionals do not consistently follow the Clinical Practice Guidelines (PPK) or the clinical pathway, and this can affect the cost of care."

This observation suggests that compliance with standardized treatment protocols remains variable across clinical practice. Informant 3 further emphasized the relationship between standardized care and reimbursement, stating:

"Accurate coding, as well as physicians' adherence to the clinical pathway, also has an influence."

Collectively these findings clearly prove that the clinical pathway functions not only as a set of guiding clinical guidelines but also as a critical management instrument for coordinating and standardizing care delivery. Clinical pathways serve to mitigate clinical variation through defined recommendations for diagnostic procedures, laboratory investigations, medication use, treatment interventions, and projected duration of hospital stay, as well as supporting full clinical documentation and diagnosis and procedure coding.

These results also suggest that poor adherence to the clinical pathway might ultimately increase actual costs of care owing to not only unnecessary laboratory investigations, but also overuse of medication, extended hospitalization, and/or additional clinical interventions that are not clinically indicated. Because INA-CBGs reimbursement is by diagnosis group rather than the volume of services provided, these additional resource requirements are not guaranteed to correlate with higher reimbursement. This mechanism adds to the gap found in the current study between standardized reimbursement and the actual cost of patient care.

These findings are consistent with those reported by Aulia & Ayu (2017) and Kurniawan et al. (2026) , who demonstrated that adherence to standardized clinical pathways reduces unwarranted variation in healthcare delivery, promotes more appropriate resource utilization, and improves cost efficiency under prospective payment systems. Beyond improving clinical consistency, standardized pathways also facilitate more complete medical documentation and more accurate case coding, thereby strengthening the alignment between clinical complexity and reimbursement.

From a management perspective, the findings here indicate that the clinical pathway exists, at large, as an integrative mechanism linking clinical quality, operational efficiency, and financial performance. It not only serves as a clinical protocol but also as a framework for coordinating healthcare processes, optimizing resource utilization, and supporting more accurate reimbursement within the INA-CBGs system. As clinical pathways likewise guide decisions regarding laboratory investigations, pharmaceutical therapy, and other supportive services—identified in this study as the largest contributors to treatment costs—we explore the impact of these resource-intensive components in the next section.

Laboratory Examinations and Pharmaceutical Utilization

The interview findings indicate that laboratory examinations and pharmaceutical utilization are among the primary contributors to the actual cost of managing patients with Grade I Dengue Haemorrhagic Fever (DHF). Informant 3 explained:

"Diagnostic investigations are one of the factors influencing the balance between treatment costs and reimbursement."

Similarly, Informant 5 highlighted the importance of continuous laboratory monitoring during treatment:

"If the patient's platelet count has not improved, laboratory tests will be repeated until the patient's condition stabilizes."

The influence of pharmaceutical utilization was also emphasized by Informant 2, who stated:

"Medication use is adjusted according to the patient's clinical condition, so treatment costs differ between patients."

This observation was reinforced by Informant 3, who noted:

"Medication use is one of the factors that has the greatest influence on treatment costs."

These findings are consistent with the quantitative results, which identified pharmaceuticals and laboratory examinations as the largest cost components in the management of Grade I DHF. Frequent monitoring of platelet counts, hematocrit, and hemoglobin levels is an essential component of DHF management, particularly for patients whose clinical condition has not yet stabilized. Likewise, variations in medication requirements reflect differences in disease severity, therapeutic response, and the presence of comorbidities. Consequently, patients requiring repeated laboratory investigations or more intensive pharmacological therapy consume substantially greater healthcare resources than patients with uncomplicated clinical courses.

Within the INA-CBGs reimbursement system, however, these variations in resource utilization are not fully reflected in reimbursement because payments are determined according to diagnosis groups rather than the actual quantity of laboratory services or medications provided. As a result, increased utilization of these services contributes directly to higher actual treatment costs without necessarily generating proportional reimbursement. This finding provides further explanation for the financing gap observed in the present study, in which the actual unit cost exceeded the standardized INA-CBGs reimbursement.

The present findings are consistent with those reported by Skarayadi et al. (2025) and (Hidayat, 2023) , who identified laboratory investigations and pharmaceutical expenditures as major cost drivers under prospective case-based payment systems. Previous studies have similarly demonstrated that although these services are indispensable for ensuring patient safety and appropriate clinical management, they frequently account for a substantial proportion of hospital expenditure because their utilization is highly responsive to individual patients' clinical conditions rather than standardized reimbursement categories.

Taken together, these findings suggest that laboratory investigations and pharmaceutical utilization should not be viewed as isolated cost components but rather as indicators of patients'

clinical complexity and treatment intensity. Their impact on hospital expenditure reflects the cumulative influence of clinical severity, length of hospital stays, adherence to clinical pathways, and appropriate clinical decision-making. Consequently, the efficiency of hospital financing depends not only on the management of individual cost components but also on the hospital's ability to coordinate these interrelated processes effectively. This broader perspective provides the foundation for the following discussion on the efficiency of hospital resource utilization.

Hospital Resource Efficiency

The interview findings indicate that hospital resource efficiency represents a critical determinant of the relationship between INA-CBGs reimbursement and the actual cost of patient care. Informant 3 stated:

"Efficient use of healthcare resources and effective control of operational costs have a considerable influence on the Cost Recovery Rate (CRR)."

This finding suggests that hospital financial performance depends not only on the reimbursement mechanism itself but also on the hospital's ability to manage healthcare resources efficiently throughout the entire episode of care. Effective resource management encompasses the appropriate utilization of healthcare personnel, hospital facilities, pharmaceuticals, laboratory investigations, and inpatient services while maintaining the quality and safety of patient care.

The findings of this study indicate that resource efficiency should be understood as the cumulative outcome of multiple interrelated clinical and operational processes rather than as a simple cost-containment strategy. Inefficient utilization of healthcare resources—including unnecessary laboratory investigations, inappropriate pharmaceutical use, prolonged hospitalization beyond clinical necessity, incomplete clinical documentation, or inaccurate diagnosis and procedure coding—can increase the actual cost of care without generating additional reimbursement under the INA-CBGs prospective payment system. Because reimbursement is determined according to diagnosis groups rather than the quantity of services provided, hospitals must absorb the additional costs associated with inefficient resource utilization.

This study extends previous research by demonstrating that hospital resource efficiency is not an isolated operational variable but the product of effective coordination across the entire care process. The interview findings revealed that efficient resource utilization is closely linked to appropriate management of length of hospital stay, adherence to clinical pathways, rational laboratory and pharmaceutical utilization, accurate clinical documentation and coding, and responsiveness to patients' clinical conditions. Consequently, financial performance under the

INA-CBGs system reflects the combined effectiveness of these interconnected processes rather than the performance of any single component.

These findings complement previous studies that primarily conceptualized efficiency as a mechanism for controlling operational expenditure (Muchtiar et al., 2026b; Sariyani & Saputri, 2025) . In contrast, the present study suggests that efficiency within a prospective case-based payment system is achieved through the integration of clinical quality, operational management, and financial stewardship (Angreni et al., 2026). From this perspective, hospitals are more likely to improve financial sustainability when standardized clinical management, accurate documentation, and efficient resource utilization operate in a coordinated manner throughout the patient's episode of care.

Overall, the findings of this study demonstrate that the discrepancy between actual treatment costs and INA-CBGs reimbursement cannot be explained by the reimbursement system alone. Instead, it arises from the interaction between a standardized case-based payment mechanism and variations in patient complexity, healthcare resource utilization, and hospital management practices. This integrated perspective provides a more comprehensive explanation of the financing gap observed in Grade I Dengue Haemorrhagic Fever (DHF) services and highlights the importance of aligning clinical management with financial management to support sustainable hospital performance under the INA-CBGs reimbursement system.

CONCLUSION

This study identified a discrepancy between the hospital's internal tariff (Rp82,925,300), the INA-CBGs reimbursement (Rp69,730,500), and the actual cost of providing Grade I Dengue Haemorrhagic Fever (DHF) services for Class III patients at a Type C hospital in Palembang, Indonesia. The Cost Recovery Rate (CRR) of 96.21% indicates that reimbursement received through the INA-CBGs system was insufficient to fully cover the actual cost of patient care, resulting in a financial deficit for the hospital.

The findings demonstrate that this financing gap cannot be explained solely by the standardized INA-CBGs payment mechanism. Instead, it arises from the interaction of several interrelated factors, including the length of hospital stay, patients' clinical conditions, diagnosis and procedure coding accuracy, adherence to clinical pathways, laboratory and pharmaceutical utilization, and the overall efficiency of hospital resource management. These findings highlight that financial performance under a prospective case-based payment system depends not only on reimbursement policies but also on the effectiveness of clinical and operational management within the hospital.

This study contributes to the healthcare financing literature by demonstrating that hospital resource efficiency should be viewed as an integrated outcome of coordinated clinical,

operational, and financial processes rather than merely a strategy for cost containment. Strengthening these interconnected processes may help hospitals improve financial sustainability while maintaining the quality and safety of patient care under the INA-CBGs reimbursement system.

Based on the findings of this study, several practical implications can be proposed for key stakeholders.

1. Hospital-based internal cost management is not limited to routine financial maintenance, including such measures as monitoring unit costs and Cost Recovery Rate (CRR), regular audits of adherence to clinical pathways, continuous monitoring of the length of hospital stay, and verification of diagnosis and procedure coding before INA-CBGs claim submission. Such measures should improve reimbursement accuracy and assist resource use optimization, improve operational efficiency, and preserve the quality and safety of healthcare services.
2. The Government and BPJS Health can, therefore, periodically evaluate INA-CBGs reimbursement tariffs based on changes in actual treatment costs, variations in patient clinical complexity, patterns of healthcare resource utilization, and differences in hospital characteristics. Aligning reimbursement policies with evidence regarding actual service costs could aid in the financial sustainability of hospitals and, ultimately, the long-term effectiveness of Indonesia's National Health Insurance (JKN) system. Furthermore, strengthening national quality assurance mechanisms alongside reimbursement policies may motivate hospitals to improve efficiency without compromising patient outcomes.
3. For both individual patients and the community, encouraging early healthcare seeking behavior through adherence to medical recommendations during hospitalization can support timely recovery, reduce the likelihood of complications, and possibly decrease unnecessary healthcare use. Since DHF is a preventable infectious disease, community engagement in vector control efforts, particularly the elimination of mosquito breeding sites, remains essential for reducing disease incidence and the associated burden on healthcare services.

Research is needed in several domains to support hospital financial sustainability improvement for INA-CBGs reimbursement system for a stronger evidence base. The first aspect would be for future studies to examine patients' utilization behavior in their healthcare seeking and treatment adherence and service utilization behaviors since such behaviors may also indirectly affect resource consumption, hospitalization patterns and cost in health care. Second, investigating the potential association between quality of care, especially adherence to clinical pathways, and financial efficiency would offer valuable information about if a standardization approach to clinical management could enhance patient outcomes and hospital financial performance.

In addition, future studies need to cover different diagnoses, severity levels, and inpatient classes in different hospital settings. Such extended examinations will offer a fuller view of the INA-CBGs reimbursement system's implementation and what happens to hospital financing as the system is rolled out. In addition, comparative studies that take place in multiple hospitals or through different hospital classifications will also aid in identifying contextual factors influencing the relationship between reimbursement, resource utilization, and financial sustainability, thereby allowing the evidence to substantiate future adaptations towards Indonesia's prospective payment system.

BIBILIOGRAPHY

Abu Jaber, A. A., & Nashwan, A. J. (2022). Balanced Scorecard-Based Hospital Performance Measurement Framework: A Performance Construct Development Approach. *Cureus*. https://doi.org/10.7759/CUREUS.24866

Adlia Syakurah, R., Frymaruwah, E., Mufarikhah, M., Izzatika, M., & Kebidanan Rangga Husada, A. (2025). Comparative Analysis of INA-CBGs Tariffs and Unit Cost of Cesarean Section: A Systematic Review in Indonesian Hospitals. *Journal of Public Health Sciences*, *4*(03), 401–420. https://doi.org/10.56741/IISTR.jphs.001257

Agustina, A., Putri, P. P., Setianingrum, E. K., Hartono, B., & Daud, A. G. (2025). Health Insurance Model In The Perspective Of Health Economics: Transformation, Regulation, And Implementation In Indonesia. *International Journal of Health and Pharmaceutical (IJHP)*, *5*(3), 380–385. https://doi.org/10.51601/IJHP.V5I3.421

Aljuaid, T. H., Alqahtani, K. M., Altwaijri, S. A., Bokhamsin, T. H., Alshaghroud, S. M., Alrashed, M. A., Alzahrani, N. S., Alruqaie, R. I. M., Alsharif, R. M., Aldawsari, A. H. A., & Alshammari, B. G. (2021). The Role of Public Hospitals in Providing Free Healthcare Services: Enhancing Accessibility and Promoting Positive Health Outcomes for Communities. *International Journal of Health Sciences*, *5*(S1), 1545–1565. https://doi.org/10.53730/IJHS.V5NS1.15433

Alvianto, M. J., & Pribadi, F. (2025). Analysis of Indonesian Case-Based Groups with Global Budget Pilot Project Implementation. *Indonesian Journal of Innovation Studies*, *26*(4), 10–21070.

Andonotopo, W., Bachnas, M. A., Prabowo, W., Pramono, M. B. A., Dewantiningrum, J., Lukas, E., Sanjaya, I. N. H., Wiradnyana, A. A. G. P., Kusuma, A. A. N. J., Gumilar, K. E., Darmawan, E., Akbar, M. I. A., Aldiansyah, D., Suryawan, A., Putra, R. A., Anwar, A. D., Yeni, C. M., Bernolian, N., Nugraha, L. A. K., … Stanojevic, M. (2026). Financing High-risk Pregnancy under Indonesia's Jaminan Kesehatan Nasional (Badan Penyelenggara Jaminan Sosial): Kartu Skor Poedji Rochyati-driven Referrals, Case-mix Alignment, and Quality Assurance – A Systematic Review. *Journal of Public Health and Primary Care*, *7*(2), 87–99. https://doi.org/10.4103/JPHPC.JPHPC_50_25

Angreni, N. W. O., Takke, J. A. M., & Zainuddin, N. Z. S. (2026). Medical record analysis in supporting bpjs health claims in a hospital: A retrospective descriptive quantitative study. *Jurnal Ilmiah Kesehatan Sandi Husada*, *15*(1), 242–251. https://doi.org/10.35816/JIKSH.V15I1.246

Ariwardani, B. N., Tamtomo, D. G., & Murti, B. (2019). Factors Affecting The Cost Gap Between INA CBGs Tariff and Hospital Tariff for Patients with Dengue Hemorrhagic Fever in Ngawi Regional Public Hospital, East Java. *Journal of Health Policy and Management*, *4*(3), 204–213. https://doi.org/10.26911/THEJHPM.2019.04.03.08

Aulia, D., & Ayu, S. F. (2017). Analisis Upaya Rumah Sakit dalam Menutupi Kekurangan Biaya Klaim Indonesia Case Base Group (INA-CBGs) Yang Dihitung dengan Metode Activities Base Costing pada Rumah Sakit Swasta Kelas C di Kota Medan Tahun 2017. *Jurnal Ekonomi Kesehatan Indonesia*, *1*(4), 2. https://doi.org/10.7454/eki.v1i4.1783

Barker, A. R., MacKinney, A. C., & McBride, T. D. (2023). Policy implications of fixed-to-total-cost ratio variation across rural and urban hospitals. *Journal of Rural Health*, *39*(4), 737–745. https://doi.org/10.1111/JRH.12767;REQUESTEDJOURNAL:JOURNAL:17480361;WGROUP:STRING:PUBLICATION

Bonara, F., & Fajar, H. (2025). Nursing care for children with dengue hemorrhagic fever in fulfilling the needs of fluid and electrolytes at hative passo hospital : a case study. *Innovative Approaches in Health Science Journal*, *2*(1), 43–47. https://doi.org/10.64871/7DZV0R44

Busse, R., Geissler, A., Aaviksoo, A., Cots, F., Häkkinen, U., Kobel, C., Mateus, C., Or, Z., O'Reilly, J., Serdén, L., Street, A., Tan, S. S., & Quentin, W. (2013). Diagnosis related groups in Europe: moving towards transparency, efficiency, and quality in hospitals? *BMJ*, *346*(7916). https://doi.org/10.1136/BMJ.F3197

Chatterjee, S., Levin, C., & Laxminarayan, R. (2013). Unit Cost of Medical Services at Different Hospitals in India. *PLOS ONE*, *8*(7), e69728. https://doi.org/10.1371/JOURNAL.PONE.0069728

Couturier, V., Srivastava, S., Hidayat, B., & De Allegri, M. (2022). Out-of-Pocket expenditure and patient experience of care under-Indonesia's national health insurance: A cross-sectional facility-based study in six provinces. *International Journal of Health Planning and Management*, *37*(S1), 79–100. https://doi.org/10.1002/HPM.3543;JOURNAL:JOURNAL:10991751;WGROUP:STRING:PUBLICATION

Creswell, J. W. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage publications.

Curry, L. A., Krumholz, H. M., O'Cathain, A., Clark, V. L. P., Cherlin, E., & Bradley, E. H. (2013). Mixed methods in biomedical and health services research. *Circulation: Cardiovascular Quality and Outcomes*, *6*(1), 119–123.

Darmawan, E. S., Hasibuan, S. R., Permanasari, V. Y., & Kusuma, D. (2025). Disparities in health services and outcomes by National Health Insurance membership type for ischemic heart disease and stroke in Indonesia: analysis of claims, 2017–2022. *Global Health Research and Policy 2025 10:1*, *10*(1), 33-. https://doi.org/10.1186/S41256-025-00432-Y

Dewanto, A., & Siti-Nabiha, A. K. (2025). The clinicians' perspective on the National Health Insurance implementation in Indonesia: A study in a government hospital. *International Journal of Healthcare Management*, *18*(2), 221–233. https://doi.org/10.1080/20479700.2023.2284468

Durán, A., & Wright, S. (2019). Understanding hospitals in changing health systems. *Understanding Hospitals in Changing Health Systems*, 1–238. https://doi.org/10.1007/978-3-030-28172-4/SAVE-RESEARCH

Firdaus, Y., & Ramadhan, Y. (2024). ANALISIS PERBANDINGAN TARIF RUMAH SAKIT, TARIF INACBGS DAN UNIT COST BERBASIS CLINICAL PATHWAY DENGAN MENGGUNAKAN METODE ACTIVITY BASED COSTING PADA TINDAKAN PERSALINAN NORMAL DAN KURETASE DI RUMAH SAKIT IBU DAN ANAK "X" DI KOTA TANGERANG. *Jurnal Ilmiah Manajemen, Ekonomi, & Akuntansi (MEA)*, *8*(3), 55–73. https://doi.org/10.31955/MEA.V8I3.4398

Garrick, R., Sullivan, J. J., Doran, M., & Keenan, J. (2019). The Role of the Hospital in the Healthcare System. *The Modern Hospital: Patients Centered, Disease Based, Research Oriented, Technology Driven*, 47–60. https://doi.org/10.1007/978-3-030-01394-3_6/SAVE-RESEARCH

Ghiasipour, M., Mosadeghrad, A. M., Arab, M., & Jaafaripooyan, E. (2017). Leadership challenges in health care organizations: The case of Iranian hospitals. *Medical Journal of the Islamic Republic of Iran*, *31*(1), 96. https://doi.org/10.14196/MJIRI.31.96

Gubler, D. J. (2008). Dengue/Dengue Haemorrhagic Fever: History and Current Status. *New Treatment Strategies for Dengue and Other Flaviviral Diseases*, 3–22. https://doi.org/10.1002/0470058005.ch2

Gumilang, N. E., & Sulaeman, A. (2025). RATIONALITY AND COST COMPARISON OF OUTPATIENT TYPE 2 DM THERAPY UNDER INA-CBGS: A LITERATURE REVIEW. *Medical Sains : Jurnal Ilmiah Kefarmasian*, *10*(2), 247–256. https://doi.org/10.37874/MS.V10I2.1720

Hanna, J. L., Ginting, J. B., & Nasution, S. L. (2023). Evaluation Of the Cost of Pulmonary TB and Pneumonia Therapy Based On INA-CBGS. *International Journal of Health and Pharmaceutical (IJHP)*, *3*(3), 523–532. https://doi.org/10.51601/IJHP.V3I3.183

Hasan, H., Adrianto, R., Anggraeni, I., & Selatan, S. (2025). Comparison of Hemodialysis Service Cost Effectiveness Using Activity-Based Cost Approach with Hospital Cost and Cost Recovery Rate in Regional Public Hospital IA Moeis Samarinda. *Window of Health : Jurnal Kesehatan*, *8*(4), 450–462. https://doi.org/10.33096/WOH.VI.1485

Hashimov, R. by E. (2015). Qualitative Data Analysis: A Methods Sourcebook and The Coding Manual for Qualitative Researchers. *Technical Communication Quarterly*, *24*(1), 109–112. https://doi.org/10.1080/10572252.2015.975966

Hidayat, B. (2023). Evolution of Health Technology Assessment in Indonesia: Supply Landscape, Implementation, and Future Directions. *Health Systems & Reform*, *9*(3). https://doi.org/10.1080/23288604.2024.2371470

Hirani, R., Podder, D., Stala, O., Mohebpour, R., Tiwari, R. K., & Etienne, M. (2025). Strategies to Reduce Hospital Length of Stay: Evidence and Challenges. *Medicina 2025, Vol. 61, Page 922*, *61*(5), 922. https://doi.org/10.3390/MEDICINA61050922

Huang, X., Zhu, J., & Zhang, J. (2025). Impacts of DRG point-based payment system on healthcare resource utilization and provider behavior: a pilot quasi-experimental study in China. *Frontiers in Public Health*, *13*, 1678259. https://doi.org/10.3389/FPUBH.2025.1678259/TEXT

Igusti, N., AP, A. R. A., & Arman, A. (2025). Optimizing Hospital Tariffs and Resource Allocation through Unit Cost Analysis: Lessons from a Major Indonesian Public Hospital. *Journal of Current Health Sciences*, *5*(3), 177–184. https://doi.org/10.47679/JCHS.2025127

Jauharotul Ulya, N., Prasetyo, E., Studi, P. S., Masyarakat, K., & Teknologi Kesehatan Cendekia Utama Kudus, I. (2026). Factors Associated with Dengue Hemorrhagic Fever (DHF) Incidence in Indonesia: An Indonesian Health Survey Study. *Menara Journal of Health Science*, *5*(1), 26–34. https://jurnal.iakmikudus.org/article/view/286

Jenkins, E. K., Slemon, A., Haines-Saah, R. J., & Oliffe, J. (2018). A Guide to Multisite Qualitative Analysis. *Qualitative Health Research*, *28*(12), 1969–1977. https://doi.org/10.1177/1049732318786703;PAGE:STRING:ARTICLE/CHAPTER

K. Robert, Y. (2018). Case Study Research and Applications Design and Methods (6th Edition). *Theory and Methods of Metallurgical Process Integration*, *11*(1), 179–272. https://elib.vku.udn.vn/handle/123456789/5706

Krupová, L., Pokorná, A., Krupa, M., & Benešová, K. (2025). Comprehensive cost-of-illness analysis of pressure ulcer treatment: A real-world study at a Czech university hospital. *International Wound Journal*, *22*(1), e70137. https://doi.org/10.1111/IWJ.70137;WGROUP:STRING:PUBLICATION

Kurniawan, M. D., Abdissalam, E., Ariawan, M. W., Rahem, A., Yulistiani, Y., & Wigatiningtyas, A. (2026). Cost Disparities Between Hospital Expenditures and Reimbursement Schemes in Indonesia: A Study on Chemotherapy for Breast Cancer. *Asian Pacific Journal of Cancer Prevention*, *27*(3), 999–1005. https://doi.org/10.31557/APJCP.2026.27.3.999

Kurniawan, N. A., & Rahmah, S. N. (2025). Unit Cost Analysis in Comparison with INA-CBGs and Hospital Tariffs in Indonesian Health Services: A Literature Review. *JPAS (Journal of Public Administration Studies)*, *10*(1), 1–8. https://doi.org/10.21776/UB.JPAS.2025.010.01.1

Law of the Republic of Indonesia Number 44 of 2009 Concerning Hospitals (2009).

Lee, R. M., Daly, J. G., Mallick, K., Ramanadhan, S., Torres, C. H., Hayes, C. R., Bertolini, A., Nalls, R., Emmons, K. M., & Partnership, I. (2023). Implementation of evidence-based primary cancer prevention interventions in MA community health centers: an explanatory sequential mixed methods study. *Implementation Science Communications*, *4*(1), 101. https://doi.org/https://doi.org/10.1186/s43058-023-00483-7

Maemun, S., Widiantari, A. D., Aliza, N., Setiawaty, V., & Rahmartani, L. D. (2026). Comparative Analysis of Actual Cost and Indonesian Case-Based Groups Rate in Inpatient Suspect of Acute Hepatitis of Unknown Aetiology. *Malaysian Journal of Medical Sciences*, *33*(1), 145. https://doi.org/10.21315/MJMS-05-2025-321

Mamédio, D. F., & Meyer, V. (2020). Managing project complexity: how to cope with multiple dimensions of complex systems. *International Journal of Managing Projects in Business*, *13*(4), 727–744. https://doi.org/10.1108/IJMPB-06-2019-0147

Manasikana, A., Suryawati, C., & Harto, P. (2025). Activity Based Costing and Cost Recovery Rate of Ureteroscopy Under Indonesia's INA-CBGs Payment System. *Contagion: Scientific Periodical Journal of Public Health and Coastal Health*, *7*(3), 58–70. https://doi.org/10.30829/CONTAGION.V7I3.26193

Ministry of Health Regulation Number 3 of 2023 Concerning Health Service Tariff Standards in the Implementation of the National Health Insurance Program (2023).

Monica, R. D., Firdaus, F. M., Lestari, I. P., Suryati, Y., Rohmayani, D., & Hendrati, A. (2021). Analisis Perbedaan Tarif Riil Rumah Sakit dengan Tarif Ina-CBG's Berdasarkan Kelengkapan Medis Pasien Rawat Inap pada Kasus Persalinan Sectio Caesarea guna Pengendalian Biaya Rumah Sakit TNI AU Dr. M. Salamun Bandung. *Jurnal Manajemen Informasi Kesehatan Indonesia*, *9*(1), 96. https://doi.org/10.33560/jmiki.v9i1.289

Mosadeghrad, A. M., Isfahani, P., & Karimi, F. (2020). Hospital Tariffs: A Conceptual Analysis. *Hakim Journal*, *23*(2), 246–259. http://hakim.tums.ac.ir/article-1-2017-en.html

Muchtiar, M., Narimawati, U., & Kurniawan, B. (2026a). THE ROLE OF HOSPITAL MANAGEMENT IN PRODUCTIVITY, REVENUE, EFFICIENCY, AND EFFECTIVENESS OF JKN PATIENT SERVICES: A CASE STUDY OF A PRIVATE HOSPITAL (XYZ) IN INDONESIA, 2023–2024.

Multidisciplinary Research Studies in Social Sciences, *2*(1), 38–49. https://doi.org/10.71312/MRSCHOLAR.V2I1.811

Muchtiar, M., Narimawati, U., & Kurniawan, B. (2026b). THE ROLE OF HOSPITAL MANAGEMENT IN PRODUCTIVITY, REVENUE, EFFICIENCY, AND EFFECTIVENESS OF JKN PATIENT SERVICES: A CASE STUDY OF A PRIVATE HOSPITAL (XYZ) IN INDONESIA, 2023–2024. *Multidisciplinary Research Studies in Social Sciences*, *2*(1), 38–49. https://doi.org/10.71312/MRSCHOLAR.V2I1.811

Nasruddin, H., & Ningsi, I. W. (2025). Unit Cost Of Inpatient And Outpatient Services In The JKN Era. *The International Journal of Medical Science and Health Research*, *13*(4), 1–15. https://doi.org/10.70070/2YAV7690

Nicmanis, M. (2024). Reflexive Content Analysis: An Approach to Qualitative Data Analysis, Reduction, and Description. *International Journal of Qualitative Methods*, *23*. https://doi.org/10.1177/16094069241236603;REQUESTEDJOURNAL:JOURNAL:IJQA;WEBSITE:WEBSITE:SAGE;WGROUP:STRING:PUBLICATION

Novianti, A., Prabawati Tirta Dharma, Y., Putu Juni Andika, I., & Tinggi Ilmu Kesehatan Panti Kosala, S. (2025). Implementasi Perhitungan Biaya Satuan (Unit COST) Berdasarkan Metode Activity Based Costing (ABC) Pada Pelayanan Poliklinik Mata Rumah Sakit X. *Innovative: Journal Of Social Science Research*, *5*(1), 2680–2693. https://doi.org/10.31004/INNOVATIVE.V5I1.17970

Nurmansyah, A., Kristianto, G. B., Santoso, C. B., Saraswati, E., & Anggraeniko, L. S. (2025). Analysis of basic hospital pricing using the unit cost double distribution method. *BIO Web of Conferences*, *152*, 01012.

Nurwahyuni, A., Setiawan, E., Nurwahyuni, A., & Setiawan, E. (2019). Kinerja Rumah Sakit Swasta dengan Pembayaran INA CBGs di Era Jaminan Kesehatan Nasional: Casemix, Casemix Index, Hospital Base Rate. *Jurnal Ekonomi Kesehatan Indonesia*, *4*(2), 4. https://doi.org/10.7454/eki.v4i2.3822

Organization, W. H. (1997). *Dengue haemorrhagic fever: diagnosis, treatment, prevention and control*. World Health Organization.

Pakaya, R., Daniel, D., Widayani, P., & Utarini, A. (2023). Spatial model of Dengue Hemorrhagic Fever (DHF) risk: scoping review. *BMC Public Health 2023 23:1*, *23*(1), 2448-. https://doi.org/10.1186/S12889-023-17185-3

Parveen, S., Riaz, Z., Saeed, S., Ishaque, U., Sultana, M., Faiz, Z., Shafqat, Z., Shabbir, S., Ashraf, S., & Marium, A. (2023). Dengue hemorrhagic fever: a growing global menace. *Journal of Water and Health*, *21*(11), 1632–1650. https://doi.org/10.2166/WH.2023.114

Polit, D. F. ., & Beck, C. Tatano. (2022). *Essentials of nursing research : appraising evidence for nursing practice*. 425. https://books.google.com/books/about/Essentials_of_Nursing_Research.html?id=-3sREAAAQBAJ

Qalam, A., Jurnal, :, Keagamaan, I., Kemasyarakatan, D., Margina, R. A., & Das Prena, G. (2024). Analisis Unit Cost Layanan Hemodialisis dengan Pendekatan Activity-Based Costing sebagai Strategi Peningkatan Laba Rumah Sakit. *Al Qalam: Jurnal Ilmiah Keagamaan Dan Kemasyarakatan*, *18*(4), 2548–2560. https://doi.org/10.35931/AQ.V18I4.3617

Rachmawaty, R., Sri Hariyati, R. T., Niswar, M., Wahyudin, E., Bukhari, A., Mardatillah, R., & Kim, H. (2026). Quality of mental health care among insured patients in an Indonesian psychiatric hospital. *BMC Health Services Research 2026 26:1*, *26*(1), 813-. https://doi.org/10.1186/S12913-026-14805-7

Rahayu, M., Fahlevi, H., & Mulyany, R. (2023). Determinants of Cost Recovery Rate of Inpatient Cases: Evidence from Indonesian Public Hospitals. *JIA (Jurnal Ilmiah Akuntansi)*, *8*(1), 147–166. https://doi.org/10.23887/JIA.V8I1.59019

Rahayuningrum, I. O., Tamtomo, G., Suryono, A., Kedokteran, F., & Surakarta, U. M. (2017). ANALISIS TARIF RUMAH SAKIT DIBANDINGKAN DENGAN TARIF INDONESIAN CASE BASED GROUPS PADA PASIEN RAWAT INAP PESERTA JAMINAN KESEHATAN NASIONAL DI RUMAH SAKIT. *PROSIDING SEMINAR NASIONAL & INTERNASIONAL*, *1*(1). https://jurnal.unimus.ac.id/index.php/psn12012010/article/view/2300

Riewpaiboon, A., Malaroje, S., & Kongsawatt, S. (2007). Effect of costing methods on unit cost of hospital medical services. *Tropical Medicine and International Health*, *12*(4), 554–563. https://doi.org/10.1111/J.1365-3156.2007.01815.X;SUBPAGE:STRING:ABSTRACT;WEBSITE:WEBSITE:PERICLES;REQUESTEDJOURNAL:JOURNAL:13653156;ISSUE:ISSUE:DOI

Salgado, D. M., Eltit, J. M., Mansfield, K., Panqueba, C., Castro, D., Vega, M. R., Xhaja, K., Schmidt, D., Martin, K. J., Allen, P. D., Rodriguez, J. A., Dinsmore, J. H., López, J. R., & Bosch, I. (2010). Heart

and skeletal muscle are targets of dengue virus infection. *Pediatric Infectious Disease Journal*, *29*(3), 238–242. https://doi.org/10.1097/INF.0B013E3181BC3C5B

Sariyani, M. D., & Saputri, A. R. (2025). Operational Efficiency and Profitability: A Comparative Financial Performance Analysis of Listed Hospital Corporations (MIKA, SILO, HEAL) on the Indonesia Stock Exchange During the JKN Era. *Journal of Health Service Administration and Hospital Management* , *1*(2), 9–18. https://doi.org/10.69855/JHSAH.V1I2.407

Setiawan, E., Nurjannah, N., Komaryani, K., Nugraha, R. R., Thabrany, H., Purwaningrum, F., & Sarnianto, P. (2022). Utilization patterns of healthcare facility and estimated expenditure of PLHIV care under the Indonesian National Health Insurance Scheme in 2018. *BMC Health Services Research 2022 22:1*, *22*(1), 97-. https://doi.org/10.1186/S12913-021-07434-9

Shi, X., Zhang, P., & Khan, S. U. (2017). Quantitative data analysis in finance. *Handbook of Big Data Technologies*, 719–753. https://doi.org/10.1007/978-3-319-49340-4_21/SAVE-RESEARCH

Silber, J. H., Gleeson, S. P., & Zhao, H. (1999). The Influence of Chronic Disease on Resource Utilization in Common Acute Pediatric Conditions: Financial Concerns for Children's Hospitals. *Archives of Pediatrics & Adolescent Medicine*, *153*(2), 169–179. https://doi.org/10.1001/ARCHPEDI.153.2.169

Skarayadi, O., Endarti, D., Satibi, S., & Mukti, A. G. (2025). Discrepancies in Hospital Cost and Indonesia's Case-based Groups: A Literature Review. *JURNAL MANAJEMEN DAN PELAYANAN FARMASI (Journal of Management and Pharmacy Practice)*, *15*(4), 2025. https://doi.org/10.22146/JMPF.95970

Sousa, F. F. de, Vieira, B. B., & Reis, A. da C. (2023). Cost Analysis of Hospitalization for COVID-19 in a Brazilian Public Teaching Hospital. *Value in Health Regional Issues*, *34*, 48–54. https://doi.org/10.1016/J.VHRI.2022.10.006

Stokes, S. M., Scaife, C. L., Brooke, B. S., Glasgow, R. E., Mulvihill, S. J., Finlayson, S. R. G., & Varghese, T. K. (2022). Hospital Costs Following Surgical Complications: A Value-driven Outcomes Analysis of Cost Savings Due to Complication Prevention. *Annals of Surgery*, *275*(2), E375–E381. https://doi.org/10.1097/SLA.0000000000004243

Sugiyono. (2022). *Metode Penelitian Kualitatif*. //library.stiepemuda.ac.id%2Findex.php%2Findex.php%3Fp%3Dshow_detail%26id%3D21%26keywords%3D

Supadmi, W., Izzah, Q., Suwantika, A., Perwitasari, D., & Abdulah, R. (2019). Cost of Illness Study of Patients with Dengue Hemorrhagic Fever at One of the Private Hospitals in Yogyakarta. *Journal of Pharmacy and Bioallied Sciences*, *11*(8), S587–S593. https://doi.org/10.4103/JPBS.JPBS_214_19

Tabrany, H. (2014). *Jaminan Kesehatan Nasional*. Rajagrafindo Persada. https://rajagrafindo.co.id/produk/jaminan-kesehatan-nasional/

Waters, H. R., & Hussey, P. (2004). Pricing health services for purchasers—a review of methods and experiences. *Health Policy*, *70*(2), 175–184. https://doi.org/10.1016/J.HEALTHPOL.2004.04.012

Watkins, D. C. (2017). Rapid and Rigorous Qualitative Data Analysis: The "RADaR" Technique for Applied Research. *International Journal of Qualitative Methods*, *16*(1). https://doi.org/10.1177/1609406917712131;SUBPAGE:STRING:FULL

Yassir, M., Syam BZ, F., & Fahlevi, H. (2025). Determinants of Cost Recovery of High-Need and High-Cost Patients? Evidence From Indonesian Hospitals. *F1000Research 2025 14:1466*, *14*, 1466. https://doi.org/10.12688/f1000research.172264.1

Yereli, A. N. (2009). Activity-Based Costing and Its Application in a Turkish University Hospital. *AORN Journal*, *89*(3), 573–591. https://doi.org/10.1016/J.AORN.2008.09.002

Yuspita Widiyaningrum, W., & Martien Agustian, B. (2023). IMPLEMENTASI PERATURAN MENTERI KESEHATAN (PERMENKES) NOMOR 71 TAHUN 2013 TENTANG PELAYANAN KESEHATAN PADA JAMINAN KESEHATAN NASIONAL (JKN) OLEH DINAS KESEHATAN DALAM PELAYANAN KESEHATAN DI PUSKESMAS PANGALENGAN DTP KECAMATAN PANGALENGAN KABUPATEN BANDUNG. *JISIPOL | Jurnal Ilmu Sosial Dan Ilmu Politik*, *7*(3), 59–70. https://ejournal.unibba.ac.id/index.php/jisipol/article/view/1271

TABLE AND FIGURE

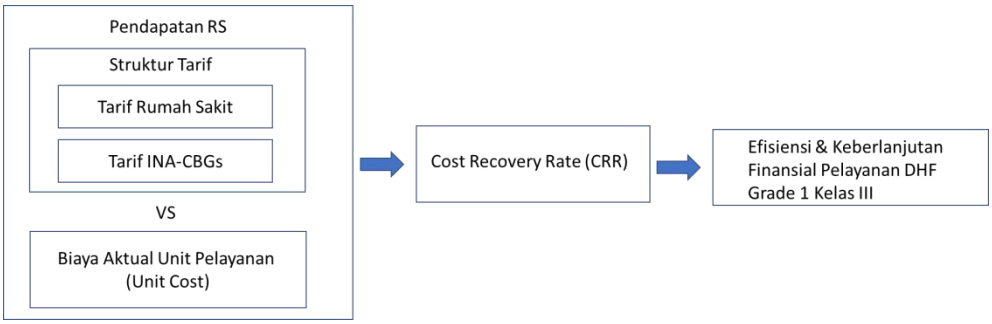


Figure 1. Research Framework

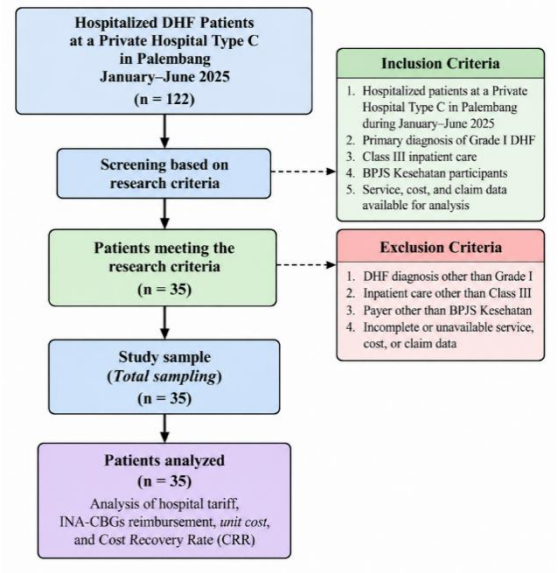


Figure 2. Data inclusion criteria

Table 1. Characteristics DHF Patients

Patient Characteristics	Result
Total Patients	35 patiens
Main Diagnose	DHF Grade I
Nursery Grade	Kelas III
Payment Method	BPJS Kesehatan
LOS Minimum	3 days
LOS Maximum	9 days
LOS Average	± 4-5 days
Main Inspection	Trombosit, hematokrit, hemoglobin
Main Therapy	Intravena liquid and symphotatic drug
Dominant Cost Component	Drug and Laboratorium test

Sumber: olah data penelitian, 2026

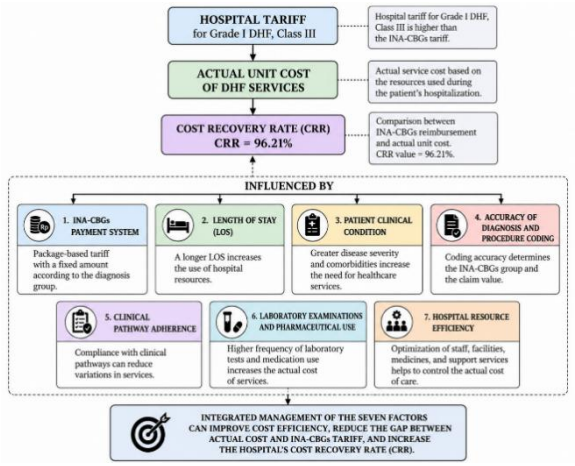


Figure 3. INA-CBGs Relationship Factors

Table 2. Characteristic of Informant

Kode Informan	Jabatan	Peran dalam Penelitian	Lama Bekerja
Informant 1 "dr R"	Vice Director of Services	Hospital financing policies and financial strategies	12 years
Informant 2 "dr P"	Internist	*Clinical pathway and management of Dengue Hemorrhagic Fever (DHF) patients*	17 years
Informant 3 "C"	Finance	Hospital unit cost calculation and tariff evaluation	13 years
Informant 4 "W"	Head of Case Mix	INA-CBGs's claim	2 years
Informant 5 "Ig"	Head of Inpatient Ward	Implementation of care for Dengue Hemorrhagic Fever (DHF) patients	12 years

Source: Author, 2026

Tabel 3a. Hospital Rates and INA-CBGs Rates

Description	Value
Total Patients	35
Hospital's Tariff Total	Rp82.925.300
Total Tariff INA-CBGs	Rp69.730.500
Tariff Differences	Rp13.194.800
Average Hospital's Tariff	Rp2.369.294
Tariff INA-CBGs per Patients	Rp1.992.300

Source: Author, 2026

Tabel 3b. Unit Cost and Cost Recovery Rate (CRR)

Description	Value
Total Patients	35
Total Unit Cost	Rp72.479.198
Total Tariff INA-CBGs	Rp69.730.500
Differences	Rp2.748.698
Average Unit Cost	Rp2.070.834
Tariff INA-CBGs per Patients	Rp1.992.300
Cost Recovery Rate (CRR)	96,21%

Source: Author, 2026

Table 4. Comparison of Hospital Tariff, Unit Cost, and INA-CBGs

Description	Value
Hospital's Tariff Total	Rp 82.925.300
INA-CBGs per patients Total	Rp1.992.300

Total Patients	35 pasien
Total Revenue INA-CBGs	Rp 69.730.500
Total Unit Cost	Rp 72.479.198
Cost Recovery Rate (CRR)	96,21%

Source: Author, 2026

Table 5. Result of Interview

Topics	Coding	Supporting Statement
INA-CBGs Payment System	Package rates don't always reflect actual costs	"The INA-CBGs financing system is packaged... while what we face on a daily basis varies. Patients can be children, patients can be adults, so the use of BMHP, fluid volume, and drug dosage are different. However, the INA-CBGs tariff for DHF remains the same." (Informant 1)
	Rates by case group	"If the INA-CBGs are based on disease cases, the package has been determined." (Informant 4)
	Adjustment of BPJS claim value	"Now we cannot determine for ourselves because from BPJS there is also an adjustment to the value of claims." (Informant 4)
Lama Rawat Inap (Length of Stay/LOS)	Variation in patient characteristics	"Adult patients use more consumables, while children use less. But the INA-CBGs tariff remains the same." (Informant 1)
	Length of stay increases service costs	"If the patient's condition has not improved, of course the patient will be treated for longer so that the cost of service will also increase." (Informant 2)
	Length of hospitalization affects unit cost	"Usually the most influential is the length of the hospitalization." (Informant 3)
	Comorbidities extend the length of treatment	"For DHF, the hope is that three days can become five days. So it's longer." (Informant 4)
	Length of treatment increases the cost of rooms, medical services, and examinations	"What should be treated for four days can be seven to eight days. It will affect the cost of rooms, DPJP fees, and the cost of supporting examinations." (Informant 5)
Patient's Clinical Condition	Severity determines the need for the service	"The cost of the service depends on the patient's condition. The more severe the patient's condition, the more actions and therapies there are." (Informant 2)
	DHF severity increases costs	"In addition to the length of treatment, the severity of DHF also affects the amount of service costs." (Informant 3)
	Therapeutic response affects LOS	"If the patient has been given therapy but the platelets do not rise, it will affect the length of treatment." (Informant 5)

Topics	Coding	Supporting Statement
	Patient condition as a dominant factor	"The dominant one is usually from the patient's condition. For example, the patient vomits constantly, does not want to eat, so the condition worsens and requires more services." (Informant 5)
	Comorbidities increase costs	"Not all complications or comorbidities can increase the claim value of INA-CBGs, even though they increase the use or cost in hospitals." (Informant 1)
	Comorbidities add therapy	"If there is a comorbidity, it means that there must be additional medications, for example five days of antibiotics." (Informant 4)
Accuracy of Coding Diagnosis and Procedure	Coding accuracy determines the value of the claim	The accuracy of coding to the doctor's compliance with the clinical pathway also has an effect." (Informant 3)
	Compliance with the clinical pathway	"There are some who have not followed the PPK or clinical pathway in a disciplined manner, it can also affect service costs." (Informant 1)
Clinical Pathway	Clinical pathway related to coding	"The accuracy of the coding to the doctor's adherence to the clinical pathway also has an effect." (Informant 3)
	The use of drugs is adapted to the patient's condition	"The use of drugs is adjusted to the patient's condition so that the cost of each patient can be different." (Informant 2)
	Drugs are a major cost component	"The use of drugs is also one of the factors that most affect the cost of services." (Informant 3)
	Supporting checks affect service costs	"Supporting examinations are one of the factors that affect the balance of service costs." (Informant 3)
Laboratory Examination and Drug Use	Repeated laboratory tests increase costs	"If the length of the treatment day is longer or the use of therapy and supporting examinations is increasing, of course the cost of service will increase while the rate of INA-CBGs remains the same." (Informant 3)
	Laboratory monitoring is carried out according to the patient's progress	"If platelets have not risen, the laboratory will be repeated until the patient's condition improves." (Informant 5)
Efficiency of Hospital Resource Use	Resource control and operational costs affect CRR	"The efficiency of the use of service resources and operational cost control also has a significant effect on the Cost Recovery Rate (CRR)." (Informant 3)