



## The Cost Difference of Hospital Rates and Indonesia Case Base Grup (Ina CBGs) Rates of Inpatient with National Health Insurance Scheme at Private Hospital

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### ABSTRACT

Background: Universal Health Coverage (UHC) stands for the ideal that everyone should have access to high-quality healthcare without facing financial hardship. Hospitals have an important role in the implementation of the referral system with the National Health Insurance scheme. The prospective payment system allows for difference between the Hospital rates and the INA CBGs rates. The difference in costs has the potential to cause benefits or losses for hospitals and plays an important role in supporting the sustainability of the hospitals. The challenges faced by private hospitals are different from those of government hospitals. Private hospitals must self-fund all costs incurred including investment costs and operating expenses. This study aimed to evaluate the difference between hospital rate and INA-CBG's rate, focus on inpatient with NHI scheme at a private hospital at Yogyakarta, identifying the cases that contribute to a common effect of cost difference and identifying the cost components that have the most impact to the dominant cost difference. Methods: We performed a retrospective quantitative research with secondary data analysis. Data was obtained from hospital billing of a Private Hospital type C at Yogyakarta, a referral hospital in Indonesia, at period of January– December 2021. The data involved of 4474 cases of inpatient with National Health Insurance Scheme. The analysis was carried out with Pareto analysis. Results: The difference between hospital rate and Ina CBGs rate of all case is 32,5 %. The Pareto analysis results that there are some NHI inpatient cases contribute a common cost difference as 1389 (31% of total cases) as high-cost case. These cases contribute 80 % of total cost difference. The cost components that have the most impact to the dominant cost difference are surgical procedures (26,1 %) and room and accommodation cost (19,7%). Conclusions: There are cost difference in which the hospital rate is higher than the Ina CBGs rate. There are 31 % of total cases as high cost cases, for the bulk of the cost difference. Surgical procedures, room and accommodation cost are the cost components that have the most impact to the dominant cost differences. This study support the necessary for hospitals to evaluate the cost difference of hospital rate and Ina CBGs rate periodically for improving quality and cost efficiency at hospitals

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#### Kata kunci:

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### ABSTRAK

Universal Health Coverage (UHC) adalah singkatan dari cita-cita bahwa setiap orang harus memiliki akses ke perawatan kesehatan berkualitas tinggi tanpa menghadapi kesulitan keuangan. Rumah sakit memiliki peran penting dalam penerapan sistem rujukan dengan skema Asuransi Health Nasional. Sistem pembayaran prospektif memungkinkan perbedaan antara

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tarif Rumah Sakit dan tarif INA CBGs. Perbedaan biaya tersebut berpotensi menimbulkan manfaat atau kerugian bagi rumah sakit dan berperan penting dalam mendukung keberlangsungan rumah sakit. Tantangan yang dihadapi rumah sakit swasta berbeda dengan rumah sakit pemerintah. Rumah sakit swasta harus mendanai sendiri semua biaya yang dikeluarkan termasuk biaya investasi dan biaya operasional. Penelitian ini bertujuan untuk mengevaluasi perbedaan antara tarif rumah sakit dan tarif INA-CBG, fokus pada pasien rawat inap dengan skema NHI di rumah sakit swasta di Yogyakarta, mengidentifikasi kasus-kasus yang berkontribusi terhadap efek umum dari perbedaan biaya dan mengidentifikasi komponen biaya yang paling berdampak terhadap perbedaan biaya dominan. Metode: Kami melakukan penelitian kuantitatif retrospektif dengan analisis data sekunder. Data diperoleh dari tagihan rumah sakit Rumah Sakit Swasta tipe C di Yogyakarta, rumah sakit rujukan di Indonesia, pada periode Januari-Desember 2021. Data yang terlibat dari 4474 kasus rawat inap dengan Skema Asuransi Kesehatan Nasional. Analisis dilakukan dengan analisis Pareto. Hasil : Perbedaan antara tarif rumah sakit dan tarif CBGs Ina semua kasus adalah 32,5%. Hasil analisis pareto bahwa ada beberapa kasus rawat inap NHI berkontribusi perbedaan biaya umum sebagai 1389 (31% dari total kasus) sebagai kasus biaya tinggi. Kasus-kasus ini berkontribusi 80% dari total perbedaan biaya. Komponen biaya yang paling berdampak terhadap perbedaan biaya dominan adalah prosedur bedah (26,1%) dan biaya kamar dan akomodasi (19,7%). Kesimpulan: Ada perbedaan biaya di mana tarif rumah sakit lebih tinggi dari tarif Ina CBGs. Ada 31% dari total kasus sebagai kasus biaya tinggi, untuk sebagian besar perbedaan biaya. Prosedur bedah, ruang dan biaya akomodasi adalah komponen biaya yang memiliki dampak paling besar terhadap perbedaan biaya yang dominan. Penelitian ini mendukung perlunya rumah sakit mengevaluasi perbedaan biaya tarif rumah sakit dan tarif CBGs Ina secara berkala untuk meningkatkan kualitas dan efisiensi biaya di rumah sakit

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## INTRODUCTION

Universal Health Coverage (UHC) is part of the 2030 sustainable development goals (SDGs). The World Health Organization (WHO) defines UHC as access of quality health care without having financial hardship. Universal health coverage (UHC) is essential for achieving the right to health, which is a fundamental human right. UHC stands for the ideal that everyone should have access to high-quality healthcare when and where they need it without facing financial hardship (Organization, 2021). The historic UN Sustainable Development Goals (SDGs) established a global commitment and acknowledged UHC as essential to achieving all other health targets. To achieve UHC by 2030, targeting health financing reforms for more sustainable and equitable strategies are urgently required (Rahman et al., 2022).

The UHC system grew rapidly and covers more than 203 million people, the largest single-payer scheme in the world, and has improved health equity and service access (Agustina et al., 2019). Strong UHC performance is correlated with the share of a country's health budget that is channelled through government and social health insurance schemes (Wagstaff & Neelsen, 2020).

CBG payments to hospitals cover both outpatient and inpatient services, as well as medical consultation and procedure fees, laboratory work, radiology, drugs, and medical supplies. (Agustina et al., 2019). The National Health Insurance of Indonesia has implemented the Indonesian Case Base Groups (INA-CBGs) tariff rates for healthcare payment since 2014. INA-CBGs stands for Indonesian Case Base

Groups. INA-CBGs is a payment method for patient care based on relatively similar diagnoses or cases (Marpaung et al., 2022).

Health-care systems strive to provide high-quality medical care while maximizing resource utilization and implementing cost-effective intervention.

Hospitals have an important role in the implementation of the referral system with the National Health Insurance Scheme. Hospitals as the health care facilities are obliged to provide excellent health care quality that is safe, effective, patient-centred, timely, efficient, and equitable (Rachmawaty et al., 2021). Governing Law in Indonesia at Government regulation no. 47 of 2021 concerning the implementation of the Hospitality sector mention that Hospitals' obligations are good health care, safe, quality, anti-discrimination, and effective prioritizing of the interests of patients by standards. Hospitals provide services that focus on safety, effectiveness, efficiency, timeliness, patient-oriented, equitable and integrated. Patients also have rights to get efficient and effective services to avoid material or physical losses (Indonesia, 2021).

Clinical pathways are commonly used in hospitals for quality and cost control in the era of universal health coverage. The difficulties encountered included issues with awareness, workload imbalances, different perceptions of doctors, and suboptimal hospital management (Fushen et al., 2022).

The INA-CBG payment system aims to encourage more patient-focused, efficient and quality services, as well as to avoid overtreatment, undertreatment, moral hazards and

adverse events. INA-CBGs pay the same rate for either public or private hospitals (Mahendradhata et al., 2017).

Ina CBG's tariffs have not changed since 2016 to 2022, while hospital rates tend to change from year to year in accordance with hospital developments due to price increases and increases in operational costs and other costs as adjustments to support the continued running of hospital services. Meanwhile, on the other hand, the increase in JKN participation has implications for the number of JKN patients served by hospitals. Payment by the INA-CBGs method with this prospective system has the potential to cause losses or benefits for hospitals, when there is a difference / disparity between the cost of patient services according to hospital rates and ina-CBGs rates for inpatient and outpatient care (Rahayuningrum et al., 2016).

The prospective payment system allows for difference between the Hospital rate and the INA CBGS rate. The difference in costs has the potential to cause benefits or losses for hospitals and plays an important role in supporting the sustainability of the hospital.

Study at 2016 of Rahayuningrum show that of Average Hospital inpatient cost was lower than average INA-CBGs tariff. Hospital type, use of ICU, and length of stay, are important determinants of hospital inpatient cost (Rahayuningrum et al., 2016).

However, there is still problem of difference between the real cost of healthcare and the INA-CBGs tariff rates. The study shows there were significant differences of non-chemotherapy expenditures based on the real cost and INA-CBG's tariff rates, in which the costs were lower for the real cost (Satibi et al., 2019). The analysis of Satibi highlights the need to review the INA-CBG tariff rates in order to make them more in line with actual healthcare costs. (Satibi et al., 2019).

The challenges faced by private hospitals are different from those of government hospitals. Private hospitals must self-fund all costs incurred including investment costs and operating expenses.

Private hospitals with higher service costs experienced a significant decrease in income, while Government hospitals remained stable despite their income being lower than they should have been (Maryati, Yuliani, et al., 2021).

Currently, most of the patients in private hospitals are NHI patients. The difference between INA-CBG rates and actual hospital rates is a major issue, so hospitals must work hard to achieve quality control and cost control. Hospitals need to evaluate the cost difference periodically, identify the cases that contributes to a common effect and finding the cost component that have the most impact to the cost difference.

It is necessary to study the difference between the cost of care (hospital costs) inpatients according to hospital rates compared to BPJS claims based on Ina CBGs rates at private hospital. The aim of this study was to evaluate the difference between Hospital rate and INA-CBG's rate of Inpatient with NHI scheme at a Private Hospital, identifying the high cost cases that contributes to a common effect and identifying the cost component that have the most impact to the cost difference.

## METHODS

We performed a retrospective quantitative research and observational study. This was quantitative research with secondary data analysis. This study was conducted at a

Private Hospital type C at Yogyakarta, a referral hospital in Indonesia. Data obtained from inpatient hospital billing at period January– December 2021. The data involved of 4474 cases of inpatient with National Health Insurance Scheme. The research instruments were hospital inpatient cost and INA-CBGs rates. The hospital inpatient cost billing records 18 cost components include nonsurgical procedure cost, surgical prosedur cost, room and accommodation cost, medicine cost, laboratory, radiology costs, consumables, medical devices, blood service, etc. The study evaluate the difference between hospital rates and ina CBGs rates. The analysis was carried out with Pareto analysis (Powell & Sammut-Bonnici, 2014). The Pareto principle states that in any population that contributes to a common effect, a few account for the bulk of the effect. It is indicative that the majority of results are often derived from a minority of inputs.

## RESULTS AND DISCUSSION

### Difference between Hospital inpatient rates and Claim rate of Ina CBGs.

Total difference between hospital costs and ina cbgs rate of all case is 32,5 %, there are 1389 cases that contributes to the common effect of the difference the hospital cost is higher than the Ina CBGs cost. The cost difference between hospital rate and Ina CBGs rate of all case is 32,5 %. The pareto analysis results that there are some NHI inpatient cases contribute a common cost difference as 1389 (31% of total cases) as high cost case. These cases contribute 80 % of total cost difference.

The cases at patero A category than analyzed by identify the determinat/cost component having the most impact to the cost difference. Cases at top rank A category is the high cost case cause these cases contributes the coomon effect of cost difference . Cases at B Category is the category that contributes 15% of the total difference and there are 610 cases (14%). And C category is the category for cases that contributes 5 % of total differences of all case sand there are 2475 case( 55% of all cases).

The cases at pareto A category than analyzed by identify the determinat/cost component having the most impact to the cost differences

The picture shows that the cost components of cases at pareto A category (1389 cases). The diagram shows that cost components that have the most impact to the dominant cost difference are surgical prosedurs (26,1 %) and room and accommodation cost (19,7%). Then consumables, nursing and medicine.

## DISCUSSIONS

### Statement of Principal Findings

There are cost differences in which the hospital cost is higher than the Ina CBGs rate. There are 31 % cases contribute a common cost difference as 1389 as high cost cases, for the bulk of cases differences. These cases contribute 80 % of total cost difference. Surgical procedurs, room and accommodation cost are the cost components that have the most impact to the dominant cost difference between hospital cost and Ina CBGs rate.

**Strengths and Limitations**

The strength of this study is how to finding the high cost cases, the cases having most contribute to the cost differences between hospital costs and hospital rates, the first study by using Pareto analysis to evaluate the difference of cost. This cost difference important to be evaluated because it is important for the sustainability of hospital, in which the the difference in costs has the potential to cause benefits or losses for hospitals, especially in private hospitals. Hospitals have important role in the National health coverage , important part of Universal Health Coverage goals. This study can be a refference for hospitals which giving health services for NHI patients. This study support the necessary for the hospitals to evaluate periodically the cost differences and identify the cases contribute a common cost difference of hospital rates and Ina CBGs rate. These data will be valuable for hospitals to evaluate and focus on a few amount of cases as high cost

cases. These focused evaluated cases will be small things with big impact for improving quality and cost efficiency at hospitals.

The data of this study become the strength of the study, because using the riil data of 12 months data periode, with thousands of data sampels of inpatient using the National health Insurance Scheme.The data is complete with the cost determinant/cost components, so we can find and evaluate the cost components of hospital cost, how this cost component giving contribute to the difference of hospital costs. The data take from a private hospital, as a case study.

The limitation of this study is the variation of private hospitals. The other limitation is the study is done before the increase of the Ina CBGs tarif at 2023. It is necessary for the next study to analysis the difference in cost between hospital cost (cost of care) and Ina CBGs cost at the other type of private hospitals and also to study the cost difference after the increase of Ina CBGs tarif after a 12 month periode (after the end of 2023).

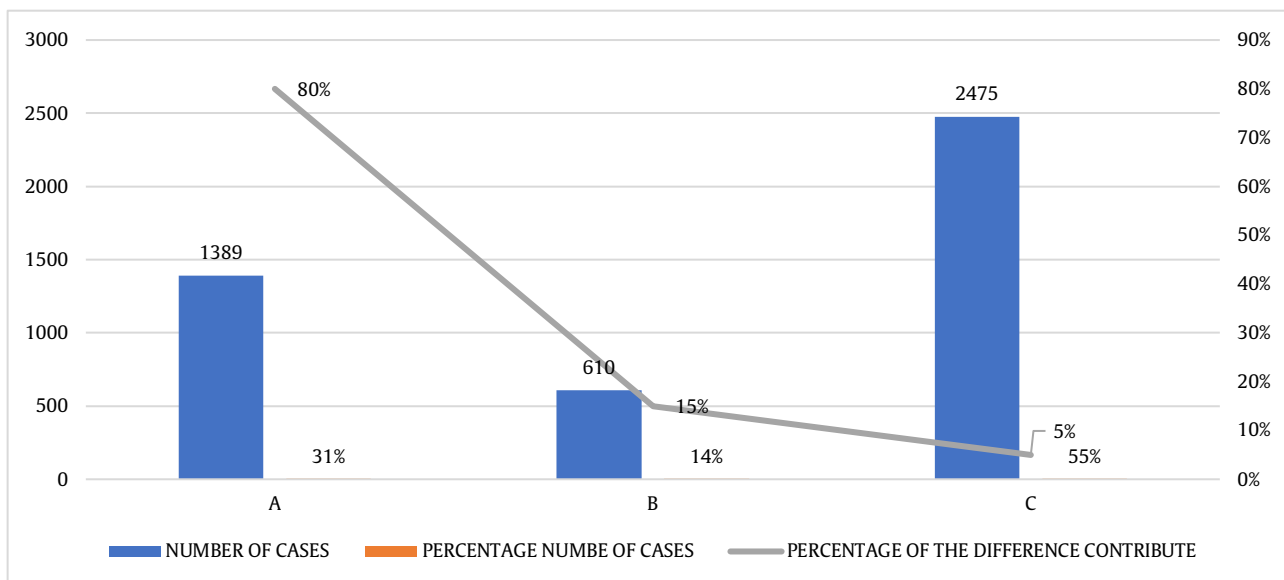
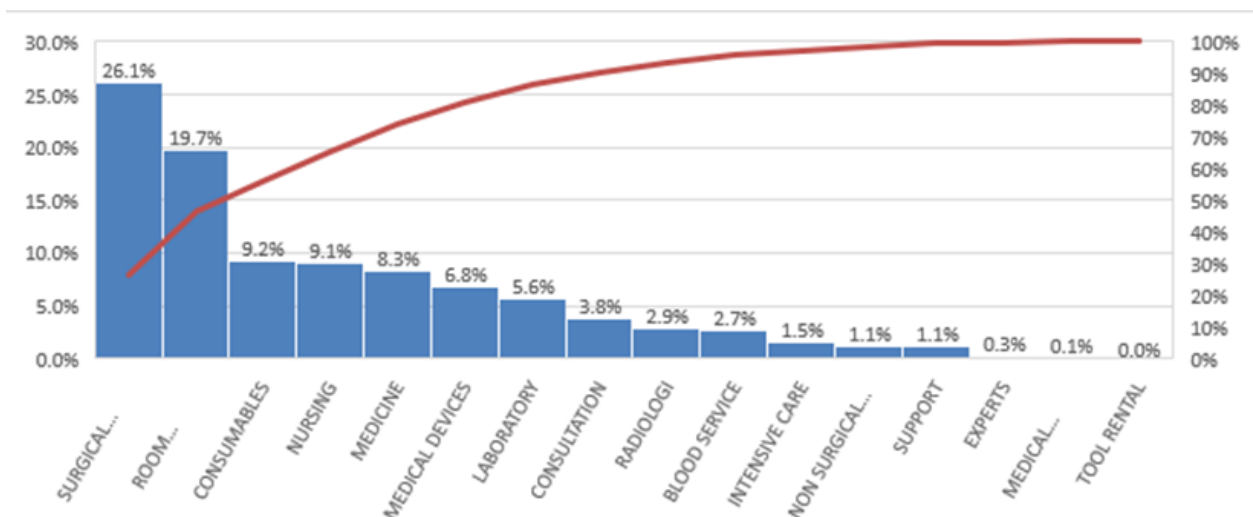


Figure 1: Pareto Analysis Results on the difference between hospital inpatient rates and Ina- CBGs rate

**The proportion of Cost Component of Inpatient with NHI Scheme**



### *Interpretation within the context of the Wider literatures*

Earlier research, the study of Putu gede indicate that the hospital rate for inpatient service is higher 36 % than the total Ina CBGs rate. Most of the average real costs were higher than INA-CBG's rate of stroke treatment.

The results of this study is in line with earlier researches, study conducted Kurnia at a private hospital in Indonesia showed there is a difference between hospital inpatient cost and INA-CBGs tariff in patients. the actual value of the hospital inpatient billing is higher than the Ina CBGs rate (Kurnia, 2019). Study of Damara showed Hospital rate is higher than In CBGs rate at a public hospital (Damara et al., 2022).

There was a significant disparity in higher total hospital costs compared with government INA-CBGs cost (Wardhana et al., 2020). The mean INA CBGs reimbursement for inpatient chronic renal disease care is lower than the mean hospital medical care cost (Tamtomo & Murti, 2018). The study of Satibi, 2019 shows there were significant differences of non-chemotherapy expenditures based on the real cost and INA-CBG's tariff rates, in which the cost were higher than Ina CBGs (Hidayat et al., 2022)

This study is not inline with earlier study by Rahayuningrum, 2016 shows that hospital inpatient cost was lower than average INA-CBGs tariff. Hospital type, use of ICU, and length of stay, are important determinants of hospital inpatient cost (Rahayuningrum et al., 2016). The study is not inline with Rahayuningrum because the study was conduct at 2016, with hospital rates in 2016 while this study is with a hospital rate condition in 2021, while the INA CBGs rates are still the same or there has been no change until 2022. But this study is inline about length of stay is ismportant determinant of hospital inpatient cost.

The Pareto principle states that in any population that contributes to a common effect, a few account for the bulk of the effect. It is indicative that the majority of results are often derived from a minority of inputs. This study found that there are 1389 cases (31.5%) that contribute to the common effect of the difference (80%). These data will be valuable for hospitals to evaluate and focus on a few amount of cases as high cost cases.

The results of this study showed the cost components having the most impact to the dominant cost difference are surgical procedurs (26,1 %) and room and acomodation cost (19,7%). The room and acomodation cost is related with the Long of stay of inpatient at hospital. The results is inline with study of Latifah, an increase in the length of stay and the delay of the surgery schedule will increase the cost difference (Lathifah et al., 2020). The study of Tamtomo Hospital type, use of ICU, and length of stay, are important determinants of hospital inpatient cost ((Tamtomo & Murti, 2018). Difference in INA CBG rates and hospital medical service costs were affected by the class of care, length of stay, age, blood transfusion, comorbidity and complications (Ariwardani et al., 2019).

The surgical procedurs related with the hospital rates and also coding. Study of Maryati showed that the accuracy of the diagnosis code has a significant impact on the accuracy of the INA-CBGs claim.

This study showed that surgical procedurs is the cost component that have the biggest effect to the difference of cost between hospital cost and Ina CBGs cost. The hospital should monitor the surgeon's compliance with the length of stay of cases at pareto A. The schedule for the surgery also needs to be followed to prevent the delay from reducing the cost difference (Lathifah et al., 2020)

The hospital need to evaluate the acuracy of coding of cases with surgical procedurs and also the rates and unit cost of surgical procedurs. The study of Kim, et all showed surgical hospitalizations for Medicare and Medicaid/Uninsured patients cost more than Private patients. Variable costs should be used to avoid overestimating potential cost savings of quality improvement interventions, as total costs include fixed costs that are difficult to change in the short term (Kim et al., 2022).

This study of Zafirah, 2018 revealed that the quality of coding is a crucial aspect in implementing casemix systems. Intensive re-training and the close monitoring of coder performance in the hospital should be performed to prevent the potential loss of hospital income (Zafirah et al., 2018). These results emphasize the importance of correct medical coding to avoid potential losses (Jacobs et al., 2011). Collaboration among coding officers, nurses, doctors, and other health professionals improves inpatient care efficiency and claims management effectiveness (Saputro<sup>1</sup> & Pribadi)

It was found that the redesign process of the formation of hospital claims will make hospitals more organized, precise, effective, and efficient, therefore positively impacting hospital income (Marpaung et al., 2022).

The medicine cost is lower and not the dominant cost component. This results is inline with the study of Anggriani et al, 2020, the pharmaceutical policies under the JKN implementation had a profound impact on decreasing medicine procurement prices in Indonesia (Anggriani et al., 2020)

Hospitals must be more prudent in managing finances under the INA-CBGs pattern, because the tariff may appear low because some treatments are not cost effective or are still unnecessary for patients, accounting for a large portion of the package's cost (Maryati, Othman, et al., 2021)

The hospital also need to evaluate the implementation of CP in the cases of pareto A, especially cases with surgical procedurs. Implementation of CP can significantly reduce hospital length of stay and cost without reducing the quality of health service (Tanjung & Nurwahyuni, 2019).

### *Implications for policy, practice and research*

For policy, this study is support the importance of periodic evaluation of both the National health Insurance policy about Ina CBGs rates policy and support the sustainability of hospitals especially private hospitals to support the UHC goals. The private hospitals should have the special rate of Ina CBGs, bigger than public hospitals. The issues that private hospitals encounter differ from those that government hospitals face. Private hospitals must cover all expenditures, including investment and operating expenses, on their own.

For practice, the hospitals need to evaluate the difference between hospital rate and Ina CBGs rate periodically, monthly and using pareto analysis to evaluate the cost of difference, finding the cases that contribute to the common effect of the difference and the cost component that having the most impact to the cost differences. This can be done in the case of outpatients or inpatients who use National Health Insurance at hospitals, especially at private hospitals.

For researches, it is necessary to the next study to analyse the cost difference of hospital cost and Ina CBGs rates of outpatient and inpatient at the other type of private hospitals and also in public hospitals with pareto analysis or other methode to find the factors having most impacts to the cost differences.

## CONCLUSIONS AND SUGGESTIONS

There are cost difference in which the hospital rate is higher than the Ina CBGs rate as 32,5 %. There are 1389 cases or 31 % of total cases as high cost cases, cases that contribute to the common effect of the difference. Surgical procedures, room and accommodation cost are the cost components that have the most impact to the dominant cost difference. This study support the necessary for the hospitals to evaluate periodically the cost difference and identify the cases contribute a common cost difference of hospital rates and Ina CBGs rate. These data will be valuable for hospitals to evaluate and focus on a few amount of cases as high cost cases. These focused evaluated cases will be small things with big impact for improving quality and cost efficiency at hospitals.

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