A Study of Readmission Rates and the Implementation of National Health Insurance

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Abstract

Background: This paper reviews the implementation of the National Health Insurance (NHI/JKN) program regarding the Indonesian-Case Based Group (INA-CBG) payment system, including a response from hospital management, especially regarding INA-CBG rates and perceptions that low rates trigger "ineligible readmission" events, which are defined as "inpatient cases that returned for treatment in less than or equal to 30 days with either the same or a similar diagnosis." Objective: This paper aimed to show an ineligible readmission pattern (including number, type of hospital ownership, Casemix Main Groups (CMG), primary diagnosis, and differences in cost) in NHI/JKN implementation in the Sukabumi branch office. Methods: This study employed descriptive analytic research using the secondary data of hospitalization claims at 12 hospitals in Sukabumi City, Sukabumi Regency, and Cianjur Regency. Terms defined included inpatient readmission with the hospitalization status of early return or "recovered." Exclusions included "eligible readmission" diagnoses, such as beta thalassemia and chronic renal failure, and CMG. Results: Data were collected on 55,496 patients, which showed that the readmission rate was 18.76%, from which 45.64% had the same CMG with an exclusion, and 45.74% had both the same CMG and the same main diagnosis. The results showed that INA-CBG rates were higher than hospital rates. Conclusion: Ineligible readmissions are causing increased and unnecessary costs due to a lack of readmission regulation. Possible solutions could include the creation of a detection and warning application for potential fraud, INA-CBG rate improvements, and government support of improved health services in hospitals.

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Introduction

The National Social Security System (NSSS/SJSN) in Indonesia implemented the NHI/JKN program through the Social Security Agency of Health (SSAH/BPJS-Kesehatan) on January 1, 2014. As a healthcare financing organization, NHI/JKN aims to provide effective and efficient prospective payment through INA-CBG for hospitalizations.[1] INA-CBG is a diagnosis-related grouping (DRG) system that was developed in Indonesia. It was previously known as INA-DRG; however, after the vendor contract ended, a new agreement to use DRG was developed by in collaboration with the University of Kebangsaan Malaysia, and the program was subsequently named INA-CBG. DRGs are often associated with prospective payment systems in hospitals. The DRG approach to managing hospital services differs from traditional services, which focus on end hospital "products" being individual services, which are the purpose of the service itself.

The DRG system is based on principal diagnosis, secondary diagnoses, surgical procedures, age, sex, and the return status of patients. With the DRG system, hospitals can better understand treatments, costs incurred, and required services[2], which allow for both the effective utilization and the efficient production of goods and services.[3] However, hospitals that fail to meet patients' needs are unsuccessful, even if they produce and deliver services efficiently.[2]

The DRG system has been shown to be a good measurement of hospitals' quality pf care because of its selection standards. For example, length of stay, the use of special services, such

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as radiology and laboratory, and patient experience can be compared with DRG criteria.[4] However, the DRG method also has certain disadvantages, such as premature reduction in length of stay (LOS), up-coding to obtain larger payments, and hospitals avoiding patients with high dependency.[2] There are three main incentives for hospitals within the DRG system: 1) decreased costs per treatment; 2) increased hospital revenue per patient; and 3) an increased number of patients. These three incentives have both expected consequences, and unexpected consequences, such as inefficiency and a lack of quality and technological innovation.[5] In response to the three incentives, hospitals have adopted the following strategies: 1) reducing length of stay; 2) reducing intensity of services; 3) selecting patients; 4) changing coding practices; 5) changing patient admission rules; and 6) improving the hospital's reputation. Of the those six strategies, three (selecting patients, intensity of services, and admission rules) are closely related to inpatients, which can be found in the changing of some coding practices[2], such as those used for inpatient readmissions.

Readmission is a response to changing payment patterns. It differs from the fee-for-service model, which tends toward over-utilization and over-treatment, with the weakness of the DRG system—in this case INA-CBG—being under-treatment. Readmission complaints by participants of the NHI/JKN particularly came from the "ineligible readmissions," which (in this study) were defined as "inpatient cases that returned for treatment in less than or equal to 30 days with either the same or a similar diagnosis." An "ineligible readmission" event is often associated with the perception of lower DRG rates. The definition of readmission, from the National Quality Forum America, is an inpatient admission during the period less than 30 days after discharge from inpatient care regarding the same health/medical problems either in the same or a different hospital. Some literature has suggested that restrictions should be placed on readmissions within 30 days after discharge and repeated hospitalizations of the same patient during certain periods of time.[6]

Readmission cases have been a concern for many countries that are implementing DRG. In the United Kingdom (UK) and Germany, readmissions that occur within 30 days are not paid separately but rather are paid as part of the first treatment course. In England, the establishment of DRG payments was based on only the cost of a good quality hospital and "best practices." In both Germany and the Netherlands, insurers negotiate with the hospital for either higher or lower DRG payments for either a particular DRG or the presence of certain diseases, based on either the findings or lack thereof regarding certain quality standards. In France, hospitals measure quality improvement because they are paid through budget allocations that are not based activities. In both the United States of America (USA) and the UK, payment of all hospitalizations must be adjusted either up or down by a percentage rate of the readmission, which must be predetermined as either above/below average or above/below the target set (USA) and based on the finding or lack thereof regarding predefined quality results.[7]

Langenbrunner stated that some countries, including the USA and Germany, have sought to lower readmissions in different ways; the USA chose to assess and punish hospitals with high readmission rates.[7] Conversely, Germany created pricing models that encourage hospital patients to resolve health problems on their own. The USA also has the Readmission Reduction Program, which was established and applied on October 1, 2012. With that said, what about readmissions during the NHI/JKN era in Indonesia? Any readmission, if allowed, would require its "justification" as a "necessity" for the hospital. Losses would be incurred not only in terms of financial fraud but also regarding declines in the quality of inpatient services' quality, which could decrease the public's confidence in the service. This would disrupt the overall success of the SJSN and NHI/JKN.

A study with funding from the BPJS Law in 2014, which defined a "problematic readmission" as a readmission with delta last visit with a visit to nearly similar figures at the national level and found that, out of a total of 8.86 million cases of hospitalization claims, 4.4% were "problematic readmissions." These cost IDR 1.86 trillion, which was due to the early discharge of patients at 4.2%. Comparatively, the cost of the difference between the BPJS income in December 31, 2014 of IDR 40.72 trillion and spending and the BPJS of IDR 42.65 trillion created a deficit of IDR 1.93 trillion8. Therefore, if these costs can be saved by lowering

readmissions, overall costs of the NHI/JKN program will be reduced.

BPJS Kesehatan Sukabumi is a branch office in the West Java Regional Division V (minus Bekasi and Depok), which includes five branch offices that absorb the greatest costs. The working area consists of the City of Sukabumi and two districts: Sukabumi and Cianjur Regency. Geographically, the regencies and the city in the region of BPJS Sukabumi are relatively "separate" from the territory of other branch offices, where access to hospitals outside the district/city is limited. In addition, studies on readmission rates in Indonesia are lacking. Readmission complaints that were raised by NHI/JKN participants have caused negative allegations against the quality of healthcare in the program and increased costs. This encouraged the author of the present study to show ineligible readmission patterns, including the number, types of hospital ownership, CMG, primary diagnosis, and the differences in costs.

Materials and methods

This study employed descriptive analytical research using secondary hospitalization claims' data from the BPJS Health Branch Sukabumi (2015) at 12 hospitals in Sukabumi City, the Sukabumi District, and the Cianjur District to locate "ineligible readmissions," which were defined as "inpatient cases that returned for treatment in less than or equal to 30 days with either the same or a similar diagnosis." Terms defined included inpatient readmission with a hospitalization status of returning early, which was deemed as "recovered." Exclusions in this study included "eligible readmission" diagnoses and CMG. This study used a retrospective, non-experimental (observational variable) design, which aimed to provide a descriptive overview of the object under study and extensive data analysis. This quantitative research was conducted by optimizing data on existing health services.

Inclusion criteria for this study consisted of the following: more than one hospitalization in less than or equal to 30 days, a hospitalization status of "recovered," being in the same CMG, either the same or similar diagnoses, and in either the same or a different hospital. Conversely, the exclusion criteria included being in the same group of CMGs and/or diagnosis of a disease with the same level of medical needs as well as readmission in less than or equal to 30 days (eligible readmission). Based on data from one-year claims' cases, the diagnoses that had the highest frequency of recurrent hospitalizations (beta thalassemia (D561) and chronic renal failure (N189)), which were considered as "eligible readmissions," were defined as exclusions.

Results

Data	Cases	%1	%2	Parti-cipants	Inclu-sion
Inpatient data claims	55,496	100%	100%	42,805	
Only one hospitali-zation	35,964	64.80%	64.80%	35,964	
More than one hospitali-zation	19,532	35.20%	54.31%	6,841	yes
Returned for treatment after more than 30 days	8,777	15.82%	44.94%	4,255	
Returned for treatment in less than or equal to 30 days	10,755	19.38%	55.06%	3,765	yes
Previous case "recovered"	10,413	18.76%	96.82%	3,616	yes
Previous case "referred"	340	0.61%	3.16%	171	
Previous case "forced return"	141	0.25%	1.31%	75	
Previous case "death"*	2	0.00%	0.02%	1	yes*
Different CMG**	3,683	6.64%	35.36%	1,784	
Same CMG**	6,730	12.13%	64.62%	2,163	yes
Different CMG with an exclusion***	3,637	6.55%	34.92%	1,782	
Same CMG with an exclusion***	4,753	8.56%	45.64%	1,981	yes
Different diagnosis	2,579	4.65%	54.26%	1,064	yes
Same diagnosis	2,174	3.92%	45.74%	1,079	yes

Table 1. Inpatient Data Claims for BPJS.
* = input error; adjusted to previous case or "recovered".
** = with an exclusion diagnosis (D561, N189).
***= without an exclusion diagnosis (D561, N189).

From the data of 55,496 inpatient claims, we found 10,413 readmission cases (18.76%) (Table 1). Those cases that met the inclusion criteria were determined by using the readmission date minus the date of return cases of unity (the original case) equal to 30 days by way of return cases unity is "recovered" (Table 2). From these data, 6,730 (64.62%) of the readmission cases had the same CMG without an exclusion, and 4,753 cases (45.64%) had the same CMG with an exclusion. In addition, 2,174 (45.74%) of the cases with the same CMG also had the same primary diagnosis, which was equal to 3.92% of all cases of hospitalization. The cases with the same CMG but different diagnoses numbered 2,579 (54.26% had the same CMG and 4.65% of all cases of hospitalization).

Data	Cases	Parti-cipants	INA-CBG Cost	Inclu-sion
Same CMG with exclusion***	4,753	1,981	19,982,597,928	yes
Original cases	2,772	1,925	10,727,007,053	
Readmission cases	2,772	1,925	12,419,283,055	yes
Different diagnosis	2,174	1,079	9,397,620,058	yes
Original cases	1,095	944	4,296,079,870	
Readmission cases	1,095	944	5,008,862,887	yes
Same diagnosis	2,579	1,064	10,584,977,870	yes
Original cases	1,515	1,068	5,823,494,469	
Readmission cases	1,515	1,068	6,591,991,632	Yes

Table 2. Inpatient Original and Readmission Data Claims for BPJS. ***= without exclusion diagnoses (D561, 189)

Based on the percentage of hospitalization claims per group, the government hospitals group had the greater percentage of readmission cases (5.07%) compared to the private hospitals group (4.23%). Ironically, the differences in costs between INA-CBG payments and real hospital rates were positive for government hospitals, with a surplus of approximately 17.6 billion; the total for private hospitals translated to a negative difference in cost, i.e. minus approximately 3 billion. The current study investigated readmission rates and the need to sort them by type of hospital to determine if they are significantly influenced by more expensive private hospital rates.

Based on case number, CMG Code I (Cardiovascular System Groups), K (Digestive System Groups), J (Respiratory System Groups), N (Nephro-urinary System Groups), and W (Female-reproductive System Groups) are the five highest. There are 8 CMG from 12 CMG (66.67%) with positive difference in cost between INA-CBG payment compared with real hospitals rates. Total difference in cost is IDR 499,619,228. The highest case, INA-CBG payment, and the difference are CMG Code I.

Discussion

There were 345 diagnosis codes (58.27%) (from 592 total diagnosis codes) with positive differences in cost between INA-CBG and hospitals rates, with the largest being for diagnosis code I500 (congestive heart failure). This factor supports previous findings, which indicated higher readmission rates for patients with heart disease. A positive difference in hospital rates and INA CBG rates showed that readmission was conducted by hospitals as a prevalent response when the DRG tariff was applied, i.e. they reduced the length of stay, reduced the intensity of services, and changed patterns of patient admission rules[2], regardless of whether the CBG INA rates either exceeded or were less than hospital rates.

There were 2,772 readmission cases only (with the same CMG and with an exclusion), which included the impact fees of approximately IDR 12 billion; those with a different diagnosis cost approximately IDR 5 billion, and those with the same diagnosis cost approximately IDR 6.5 billion. The costs of the readmission cases at all readmission distribution stages were always greater than the original admission. This shows that readmission cases increase in both complexity and cost; therefore, they require further study to determine the cause of their different diagnoses, which could stem from either a complication or an increased severity level, despite having the same CBG code. The intent of INA-CBG implementation is for hospitals to have more efficient care costs without reducing the quality of their services; however, after patients have been released, some return in less than 30 days with either the same or a similar diagnosis. This indicates that the original treatment was not optimal. Ineligible readmissions negatively affect the healthcare system, indicating that the

purposes of applying the INA-CBG[1] have not yet been achieved.

In both the UK and Germany, readmissions that occur within 30 days are paid as one treatment. The current study shows that the BPJS Kesehatan Sukabumi Branch Office still pays for readmission cases that have been defined as “ineligible readmissions.” There are no rules in Germany and the Netherlands that allow the BPJS Kesehatan to negotiate lower payments, even upon finding that certain quality standards have not been met. For instance, if a patient has been released and declared healthy, he/she should not require rehospitalization within equal to or less than 30 days. This study, as in previous studies, used secondary data. Inpatient cases were reviewed, with a difference in the definition of “ineligible readmission” being that earlier admissions had declared the patient to be “recovered” in the return status as an inclusion criteria, and either beta thalassemia (D561) or chronic renal failure (N189) had been identified as an exclusion diagnosis.

Conclusions

Ineligible readmissions are increasing healthcare costs due to a lack of regulation regarding readmission payments. The assumption that INA-CBG rates are lower than hospital rates proved to be false. After analyzing research from various countries, this study recommends the creation of readmission provisions, a detection and warning application for fraud potential regarding readmission cases, INA-CBG rate improvement, and support via government investments to improve the quality of health services in hospitals, particularly for highly-utilized, costly services.

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