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THE ACCURACY OF DIAGNOSIS, PROCEDURES AND CODING COMPLETENESS AND THEIR CORRELATION WITH INA-CBG CLAIMS

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ABSTRACT

Background: *Since 1 January 2014, the INA-CBG system has been applied as a method of payment for outpatient and inpatient services. Indonesian-Case Based Groups (INA-CBG) tariff is the amount of payment claimed by the Health Social Security Administering Agency (BPJS) to the hospitals for a package of services based on the classification of diagnoses and procedures of diseases. The inequality in the number of claims received by the hospital compared to the resources used will be unbeneficial to the hospital. The purpose of this study is to identify the correlation of incompleteness and inaccuracy of diagnosis, procedures, and coding to the number of INA-CBG claims at hospitals in Indonesia.*

Method*: The research method is the literature review. The authors found five articles cited by Google Scholar published in journals and two theses taken from the Library of Universitas Indonesia that include "factors that influence INA-CBGs claim amounts at hospitals" or related concepts in the title or abstract. Articles and theses published from 2014 to 2018 were search using the following terms in the title or abstract: "accuracy, completeness, diagnosis, coding, INA-CBG claims.".*

Result*: The authors found seven articles that met our criteria: Two studies used qualitative approach, three studies were quantitative studies, two studies used a mix method. From these studies, there were five practical considerations that were considered as the factors that influenced the number of INA-CBGs claims at hospitals in Indonesia: completeness of filling a medical resume, accuracy of coding, accuracy in filling medical resumes, the accuracy of information systems, and completeness of claim administration document.*

Conclusion: *The study has indicated the factors that influence the amount of INA-CBG claims in hospitals in Indonesia, mainly, the factor of completeness of medical resumes and the factor of accuracy in coding by the coders. The completeness of a medical filling resume which is highly dependent on physician compliance and accuracy coding. All the human resources who have a role in coding and claims, need to improve their capability on it, through a workshop, or any other education funded by the hospital. Coder certification must be done. Hospital has to develop hospital management information system for acceleration in coding and claim.*

Keywords: *coding, inaccuracy, incompleteness, INA-CBG claim*

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INTRODUCTION

In the implementation of National Health Insurance program (JKN), the Indonesian Case Base Groups (INA-CBG) system is one of the important instruments in the submission and payment of claims for health services that have been carried out by hospitals that have or collaborate with Social Security Agency (BPJS). Therefore, the management and each hospital need to understand the concept of INA-CBG in the implementation of JKN. The INA-CBG system consists of several components that are integrated with one another. The components that are directly related to service include clinical pathway, coding, and information technology. Other components may indirectly influence the process of preparing INA-CBG claim tariff for each case [1]. The tariff for Indonesian-Case Based Groups, hereafter referred to as INA-CBG tariff, is the amount of payment claimed by BPJS to the Advanced Referral Health Facility for a package of services based on the classification of disease, diagnoses, and procedures [2].

Destanul Aulia[1], Sri Fajar Ayu[2], Nur Hidayah Nasution found the difference in cost set by hospital and INA-CBG's claim amount. It was identified factors that cause differences are the accuracy of diagnosis, Clinical Pathway, used software, doctor, length of service, and type of services[3].

Tettey S. Sodzi-, Aikins M., Williams J. K. Awoonor, Agyepong I. A. (2012) identified that challenges of claim management processing involve computer using skill, low quantity, and integrity of human resource, unclear responsibility as management claim team, doctor compliance in clinical pathway, completeness of medical resume, and inaccuracy of coding [4].

Causes of Coding Errors and Impacts

Some important factors that cause coding errors are:

1. Different understanding of the code

2. Coder experience in coding

   Mehrdad Farzandipour and Abbas Sheikhtaheri (2009) found that the less experienced the coders are, the more errors are made. In addition, these errors were mainly major. According to our definition of the types of errors, it seems that less experienced coders have more misunderstanding about procedures[5].

3. The coder does not have basic competence in health, so it does not understand about diagnosis and procedures

   Coder educational background and tenure influence the accuracy of diagnostic codes (Friska Miftachul Janah Hubungan Kualifikasi *Coder* dengan Keakuratan Kode Diagnosis Rawat Jalan Berdasarkan ICD-10 di RSPAU Dr. S Hardjolukito Yogyakarta 2015) [6].

4. Failure to catch major comorbidities and comorbidities/complications in patient records, and so forth.

5. Coders sometimes encode only relying on memory and habits, less willing to search for available codebooks [7].

6. Lack of clarification to the doctor when documentation is unclear or incomplete

7. The doctor's own documentation is less accurate because it lacks understanding of a field of disease [7].

8. The coding, coding and clinical staff must work together to clarify and correct any deficiencies

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Coding professionals, therefore, need to partner with the physicians, CDI specialists, staff compliance, and other related professionals to ensure accuracy and quality in coding. Since coding guidelines and regulations are constantly evolving, it is the responsibility of coders to stay up to date with the new changes [8]

INA-CBG CODING

Coding is the activity of providing the main diagnostic code and secondary diagnosis in accordance with ICD-10 (International Statistical Classification of Diseases and Related Health Problems) published by WHO and providing codes of actions/procedures in accordance with ICD-9-CM (International Classification of Clinical Revision Diseases Modification) [1]. Coding is very important in a prospective financing system that will determine the amount of tariff paid to FKRTL. The rules of coding and guidelines used in INA-CBG are morbidity coding rules [5].

The coding in INA-CBG used 2010 ICD-10 the revised to encode the main diagnosis and secondary diagnosis and use the 2010 ICD-9CM revised to code the procedure/procedure. The sources of data for encoding INA-CBG come from medical resumes, namely diagnosis data and actions/procedures. If required, the data can be accessed in medical record files. The accuracy of coding diagnosis and actions/procedures greatly affects the results of the INA-CBG application [1].

The primary diagnosis is a diagnosis established by the doctor at the end of the treatment to the patient to receive treatment or further examination. If there is more than one diagnosis, most of the resources are used. If no diagnosis can be established at the end of the treatment period, the main symptoms, the results of abnormal investigations or other problems are used to be the primary diagnosis. Secondary diagnosis is the diagnosis that accompanies the primary diagnosis when the patient hospitalized or occurs during treatment. Secondary diagnosis is comorbidity and/or complications. Comorbidity is a disease that accompanies the primary diagnosis or an existing condition before the patient is admitted and needs health services when entering the hospital or during treatment. Complication is a disease that arises during the treatment period and requires additional services, whether caused by conditions or arising from the health services provided to the patients [1].

Thus, the data sources in the INA-CBG coding process are derived from the diagnosis data and procedures in medical resumes, and medical record files if required *[1]*. Therefore, the quality and reliable documents are required, and this situation depends on the doctors and coders. This research aims to analyze the incompleteness and inaccuracy of diagnosis, procedures, and coding and its correlation to the number of INA-CBG claims in Indonesia.

METHODS

The research method utilized is literature review. The literature search was conducted using Google Scholars and manual search from the library of Universitas Indonesia. The selected articles and theses were published from 2014 to 2018 and were searched using the following keywords in the title or abstract: "accuracy, completeness, diagnosis, coding, INA-CBG claims".

The search focus was on the literature that discussed the factors that influence the number of INA-CBG claims in hospitals in Indonesia, mainly, the factors that influence the completeness of medical resumes and the factors that influence the coding accuracy by the coders. The works of literature were published in Indonesian and English. The researchers screened the titles and abstracts of the collected studies, then removed some irrelevant studies and the studies that did not contain complete information or not in full text.

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Table 1. Analysis of the Included Studies

No	Article Title	Authors	Research Method	Variables	Analysis	Result (+) and (-)
1.	Analysis of correlation of medical record fulfilling and INA-CBG costing at Teratai inpatient installation RSUP Fatmawati Jakarta [9].	Dewi Apriyantini	Mix method with cross-sectional studies	Dependent Variables: suitability of INA-CBG's tariff Independent variables: Completeness of Medical Resume	Based on INA-CBG tariff for financing depends on the completeness of the medical resume including those that greatly affect the filling of the main diagnosis, secondary diagnosis, complications and co-morbidity, the main procedure, severity level, and class of care. The number of INA - CBG in this study depends on the completeness of a medical resume which is influenced by filling in the main diagnosis and secondary diagnosis Reasons for incomplete medical resume filling: a. There are still many DPJPs that do not write medical resumes that are in accordance with the rules (complete) b. Standard Operational Procedure has not been optimally implemented c. The absence of re-socialization. d. Facilities and infrastructure e. Doctor's compliance	(+) there is a significant correlation between main diagnosis and secondary diagnosis to the claim amount. (+) this study has considered the role of doctor and coder in coding management. (-)this study did not consider the accuracy of diagnosis, procedure, and coding on the claim amount (-) the sampling did not consider the proportion of cases. (-) No standard coder, and thus completeness and accuracy of coding unstandardized. (-) the reason for the researchers choose the Teratai inpatient installation as sample unclear.
2	Survey of determinants factor of BPJS inpatient's claims in order to reduce the incidence of delayed claim payment in	Kresensia Nensy	Quantitative research with cross-sectional design	Dependent Variables: Claim payment by BPJS Independent Variables: Completeness of medical resumes, the accuracy of medical	The factors determining the payment of claims for BPJS are quite complex. In this study, the factors include: 1. The completeness and accuracy of medical resume filling 2. The completeness and accuracy of the information system in claim files In this study, there were no explanation about the reason not to examine the influence of	(+)This study considered about completeness and accuracy of information system to the claim payment. (+) The multivariate analysis had done to determine the most influence factor of claim payment, which is information system.

No	Article Title	Authors	Research Method	Variables	Analysis	Result (+) and (-)
	RSUD RSUD Dr. Mboi Ruteng in 2017 [10].			resumes, completeness of the system	completeness and accuracy of diagnosis, procedure, and coding to the claim payment.	(-) The claim amount was not identified.
3	Analysis of medical resume completeness and accuracy of coding diagnoses against the potential risk of BPJS claims at inpatient units of RSUD Cempaka Putih in 2016 [11].	Wida Guslianti	Mixmethod with cross-sectional design	Dependent variable: The potential risk of hospital claims in the implementation of INA-CBG Independent Variables: Completeness of medical resumes and accuracy of diagnostic coding Completeness of medical resume: the identity of the patient, physical examination, additional examination, primary diagnosis, secondary diagnosis, therapy, name and signature of the doctor who provides services, accuracy: primary diagnosis, secondary diagnosis, and procedure.	Analyzing the correlation of incomplete medical resumes and inaccuracies in coding diagnosis and the potential risk of BPJS claims. The results of in-depth interviews related to completing medical resumes: a. lack of socialized SOP in regards to filling medical records b. Doctors' compliance and responsibilities are not optimal c. less of reward and punishment for doctors in filling out medical resumes d. lack of evaluation by management of each unit regarding the completeness of a medical resume Filling in primary diagnosis, the physical examination on a medical resume has been done by a doctor who is responsible to the patient or the doctor's room, therefore variable of primary diagnosis, and physical examination is always complete. The secondary diagnosis variable is incomplete because it is not written nor included in the main diagnosis.	(+) Patient identity is always contained in medical resumes because it is included in the standard of patient safety in accreditation, that is the accuracy of patient identification. (-) This study did not consider the effect of medical resume filling accuracy to the potential risk of BPJS claims. (+) the result is only for this hospital

No	Article Title	Authors	Research Method	Variables	Analysis	Result (+) and (-)
					Although the inaccuracy of the main procedure is not as much as the secondary diagnosis around remains very important because it relates to the amount of INA-CBG claims.	
					If the main diagnosis is incomplete or not filled, the INA-CBG tariff does not appear. Therefore the main diagnosis significantly affected the tariff to be claimed by the Hospital. The potential risk of claims is due to the process of filing claims undergo obstacle and incomplete documents and late of documents submitted.	
4	The analysis completeness medical record on INA-CBGs implementation (Case report Tetralogy of Fallot at unit pediatric cardiology and congenital hearth disease NationalCardiovascular Center at RS Harapan Kita in 2013 [12].	Indriwanto Sakidjan	Qualitative approach	Dependent variable: Completeness of medical record Independent variables: Input: 1.Human Resources (providers responsibilities) 2.Implementation of socialization and monitoring guidance 3.Standard Procedure Operational	Analysis of what matters in the input, process, and output of the organizational system in the completeness of the medical record that causes the INA-CBG code differences and impact on the financial condition for Hospital. Factors that influence the completeness of a medical resume 1. Management responsibility 2. Reward and punishment 3. Facilities 4. Policy factor: Standard Procedure Operating 5. Coaching staff 6. Monitoring and evaluation 7. Socialization	(+) the incompleteness of secondary diagnosis on medical resume effect the claim amount, therefore Standard Operational Procedure is needed for medical resume filling compliance. (-) This study did not consider the accuracy of diagnosis, procedure, and coding.

No	Article Title	Authors	Research Method	Variables	Analysis	Result (+) and (-)
5.	Analysis of coding obtained from Coders in X Public Hospital in Semarang, 2012 [13]	Dewi Indah yuniati	Quantitative and qualitative research	Dependent variable: Claim amount Independent Variable: Coding results	To assess the competence of the coder in the Hospital and the possibility of differences in claims or potential of losses that might occur. The factors of cause potential for hospital losses cause of coding errors 1. Doctor's writing is difficult to read 2. Note not complete in medical records (in operation) 3. The difficulty of the coders to understands and implements a diagnosis and procedure in the medical record in the rules of the ICD, because often it is in a different chapter There is a correlation between the accuracy of coding and the length of time being a coder. It is because of the more experienced coder used to explore all the barriers deeply and has more skill from the attended workshops. (+) More diagnosis and more procedures will reduce higher the probability of coder error.	(+) this study used standard coder, although based on length of work and workshops that follow. (+) this study identified the difference in claim amount causing coder error (-) this study does not identify the role of doctors and verificator.
6	Analysis of the completeness and accuracy of the diagnosis of procedures and coding of the number of claims in Fatmawati	Cicih Opitasari	qualitative research	Dependent variable: Claim amount Independent variable: Completeness and accuracy of diagnosis, procedures, coding.	Factors influencing completeness, conformity, and coding accuracy of diagnosis and medical procedure: discharge summary play an important role to determine hospital claims, standard operating procedures (SOPs) for medical record management, coding according to ICD, guideline on filling out medical record form, and forming responsible coding team in each department, socialized and disseminated of SOP, reward and punishment policy to support	(+) The standard coder has coder certification (+) this study found that multidiscipline cases had triggered coding, because of incompleteness medical record and medical resume filling on complex procedures (-) standard coder in this study did not do verification to the doctor who responsible on the patient, but only to the hospital verificator.

No	Article Title	Authors	Research Method	Variables	Analysis	Result (+) and (-)
	General Hospital [14].				completeness of medical record, hospital infrastructure included medical record form, computer and hospital information system, Unreadable handwriting and use abbreviations by physicians, The complexity of the diseases was mentioned causing difficulty in the verification and may cause the coders assigning inaccurate codes	.
7	Correlation of the diagnosis code accuracy and the action on approval of BPJS claim [15].	Siswati, Pratami S.L.	the cross-sectional method through the observational approach	Dependent variable: Approval of BPJS claims Independent variable: Accuracy in giving diagnosis and action codes	Analyzing the correlation of the accuracy of the provision of disease diagnosis codes and inpatient services towards BPJS claim approval in the hospitalization at Qadr Hospital, Tangerang. Factors that influence the approval of BPJS claim: 1. Accuracy of diagnosis code It depends on completeness and accuracy of diagnosis and procedures in the medical record and medical resumes. Thus, the doctor, verificator, and coder have important rules on that process. 2. Completeness of claims It depends on the administration process and coder. So, we need skilled staff and clear standard operational procedure claim process.	(+) This study found completeness of claim file as the main factor for a claim (-) The completeness and accuracy of diagnosis and procedures in medical record and resume are not consider, (-) It only examines claim approval, not claim amount. (-) No standard coder in this study.

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RESULTS

Table 1 shows the included study methodology, variables, analysis, and positive-negative results of each article — many different methods of analysis used in the studies. Two studies (1,4) used qualitative approach, three studies (2,6,7) were quantitative studies; two studies used a mix method (3,5).

All the studies took place in the hospital. Thus most of the samples were taken from inpatients. The complete factor that analyzed is study by Cicih Opita Sari, which considers the completeness and accuracy medical resume filling, diagnosis, procedure, coding. Standard coder had been used in the study by Dewi Indah Yuniati and Cicih Opita Sari. However, the ideal standard coder criteria were used by Cicih Opita Sari, which has a coder certificate. Dewi Indah Yuniati just considered the experience of the coder. Kresensia Nensy considered about completeness and accuracy of an information system to the claim payment. The multivariate analysis had done to determine the most influential factor of claim payment, which is an information system. The claim amount was not identified in this study. Therefore it needs to develop this study. Wida Guslianti patient identity always complete because it is included in the standard of patient safety in accreditation that is the accuracy of patient identification. Indriwanto Sakidjan found incompleteness of secondary diagnosis on medical resume effect the claim amount. Therefore Standard Operational Procedure is needed for medical resume filling compliance. This study did not consider the accuracy of diagnosis, procedure, and coding.

In the study by Siswati and Pratami S.L, an assessment of the claim file completeness was carried out as a claim administration which became a determining factor in the claims processing promptness. This study found completeness of claim file as the main factor for claim. The completeness and accuracy of diagnosis and procedures in medical record and resume are not considered and only examine claim approval, not claim amount. A standard coder was unavailable in this study, thus claim errors could go undetected. From these studies, there are five practical considerations that are considered as the factors influencing the amount of INA-CBG claims in hospitals in Indonesia, i.e.:

1) Completeness of filling a medical resume (1, 2, 3)
   - Completeness of main diagnosis filling on medical resume
   - Completeness of secondary diagnosis filling on medical resume
   - Completeness of main procedures filling on medical resume
2) Accuracy of coding (3,6,7)
   - Accuracy of main diagnosis coding
   - Accuracy of secondary diagnosis coding
   - Accuracy of main procedures coding
3) Accuracy in filling medical resumes(2)
4) Accuracy of information systems(2)
5) Completeness of claim administration document(7)

Approximately 42.86% of studies state that the completeness of a medical resume is important plays a role in determining the amount of the claim. 42.86% of the studies state that the accuracy of coding is related to the amount of INA-CBG claims. 14.28% of the studies state the accuracy in filling medical resumes, 14.28 % accuracy of information systems, and 14.28 % completeness claim administration document are an important role.

From seven study literature were found seven factors which influenced the completeness of medical resumes, namely:

1. Doctor compliance in filling out medical resumes (1,3,4)
2. Dissemination (1,3,4)
3. Standard Procedure Operational (1,4,6)
4. Monitoring and evaluation of management in completeness medical resume (3,4)
5. Reward and punishment (3,6)
6. Staff Development (4)
7. Availability of funding (6)

Only two literature (5,6) discussed related to the factors that influence the accuracy of coding by coder such as:

1. Experience of being a coder
2. Doctor's writing is difficult to read
3. Incomplete note in medical records, especially in the operation report
4. The difficulty of coders to understand ICD
5. Less of teamwork

DISCUSSION

This study reports incompleteness and inaccuracy of diagnosis, procedures and coding and their correlation with the INA-CBG claims in Indonesia. From this study, it can be seen how significant influence the above on the amount of the claims that an effect on the hospital operation.

Factors that influence the amount of INA-CBG claims in hospitals in Indonesia:

1) Completeness of filling a medical resume (1, 2, 3)
   - Completeness of main diagnosis filling on medical resume
   - Completeness of secondary diagnosis filling on medical resume
   - Completeness of main procedures filling on medical resume

The behavior of doctors in filling in medical records and medical resumes is still a lot that is not compliant, the use of abbreviations, unreadable writing, and inconsistencies in writing [14].

According to Apriyantini 2016, the cause of incomplete medical resumes is the fact that there are still many doctors who do not write medical resumes in accordance with the rules. The Standard Operating Procedures (SOP) have not been implemented optimally, the continuous socialization of SOP is lacking, and last the reward and punishment system, as well as facilities, infrastructure and doctor's compliance, are absent.

The research found that 55% of medical resumes were still not filled in completely at the RSUD KRT Setjonegoro Wonosobo [16]. According to the Regulation of the Indonesian Ministry of Health No. 27 of 2014 concerning INA-CBG, the factors that influence the tariff and amount are filling in the main diagnosis [17]. Moreover, Sukawan (2014) found that there was a correlation between the completeness of the main diagnoses and the INA-CBG tariff [18]. Nurfadhilah (2017), in her research, still found incomplete medical resume fillings related to the variable of the main diagnosis, secondary diagnosis, and main procedures, thus potentially causing inaccuracy toward INA-CBG tariff standard [19].

2) Accuracy of coding (3,6,7)
   - Accuracy of main diagnosis coding
   - Accuracy of secondary diagnosis coding
   - Accuracy of main procedures coding

Accuracy of diagnosis coding depends on accuracy in primary diagnosis, secondary diagnosis, and procedure by the coder. Less experienced coders should pay more attention to procedure nature and topography to improve their coding quality. In addition, lack of memory-based coding did not improve coding accuracy. Hence, it is recommended that coders consult with physicians about cases in which the coder has limited knowledge. Moreover, more readable documentation and avoidance of abbreviations by clinicians are recommended [5].

According to Lloyd (1985), the most common error coder is the decision to choose what to encode rather than code selection errors where most errors occur are coding for non-operative procedures, as for the description that the accuracy of coding results is influenced by the doctor (62%), coder (35%) and accuracy of filling into the software (3%) Coding is very subjective and synergizes with doctor's mistakes. Errors made by doctors include forgotten procedures (46.3%), forgotten diagnoses (42.9%), incorrect primary diagnoses (5.4%), incorrect terminology (4.4%) and diagnoses the inactive is considered as an active diagnosis (0.9%) [20].

Clack (2009) states that working as a coder is very important at various levels. Experience is not obtained in the classroom but built through the practice of coding [21]. Oktamianiza (2017) found that the writing of the patients' main diagnosis was still deficient because it did not refer to the ICD-10 and ICD-9 CM. Doctors should completely and accurately write the diagnosis to be readable [22].

3) Accuracy in filling medical resumes(2)

Doctors have an important role in determining the number of claims obtained, but the limited time and a large number of patients who must be served and must be fast service so that often do not complete medical resume filling according to the provisions [23]

4) Accuracy of information systems(2)

Nensy (2017) found that the independent variables BPJS claims are the accuracy of the information system [9]. Although it is different with this research conclusion, the researchers have given more attention on it, it could have happened because not all hospitals in this study have implemented an information system, so it cannot be concluded.

Antik Pujihastuti and Rano Indradi Sudra (2014) found that there was a significant correlation between the completeness of information in medical record files and the accuracy of disease diagnosis codes in inpatient medical record files [24].

5) Completeness of claim administration document(7)
   5   The factor that influences the completeness of a medical resume, mainly:
   (1) Compliance of doctors in filling out medical resumes (1,3,4,6)

   Doctors have an important role in determining the number of claims obtained, but the limited time and a large number of patients who must be served and must be fast service so that often do not complete medical resumes filling according to the provisions [23]
   The obstacles in the process of completing document of medical resume, include:
   a. Doctors, less of time and the large number of patients that must be served and quick, so they often do not complete filling in DRM accordance with provision.
   b. The coder has difficulty in determining the correct and complete diagnostic code if filling in a doctor is incomplete, moreover having to coordinate continuously with the verificator who often disagree and must clarify for certain code. This situation led to the workload of the coders

while requiring more time if some changes/corrections or even the completeness of the data is required regarding the correction of the needed code.

c.   The coder has often actively to complete it based on the relevant documents of medical record/forms if the doctor concerned does not complete it until the time limit given to be able to be coded correctly and completely.

d.   Certain doctors are usually difficult to complete because the real punishment does not implement to it. The rules of sanction have been conveyed in relation to this matter, but the implementation has not been realized properly so that the impact has not changed the doctors' behavior in completing medical diagnoses/resumes according to the provisions. The lack of realization of the consequences of sanctions and losses for doctors who do not complete medical resumes led to a major of difficulties in changing the behavior of doctors in supporting of a completeness medical resume.

(2)   SOP (1,4,6)

SOP or standard operating procedures are the guidelines in implementing work to conform to standards. SOP applies to any entity, and it should be an essential domain of an effective management system to help cultivate transparent systems, implement error preventive measures, and facilitate corrective actions [25].

(3)   Socialization (1,3,4)

Socialization in filing medical resumes is important. Budiarto et al. (2017) found that incompleteness of writing the patient's medical records on the resume sheet was due to the lack of knowledge of the physician in relation to the applicable regulation of medical resume sheet.[26]

(4)   Monitoring and evaluation in managing completeness of medical resume (3,4)

Measuring, monitoring, and presenting these non-compliant issues to the departments involved and creating a committee for quality improvement in documentation practices will contribute to the hospital's success in getting the poor documentation behaviors modified [27].

(5)   Reward and punishment (3,6)

Abdurrauf in Apriyantini (2015) point out that the implementation of reward and punishment is an important thing in the personality of a person, which is punishment produces a positive effect and the reward will be improved [8].

(6)   Staff Development (4)

The accuracy of coding in the main diagnostic will affect the accuracy of the INA-CBG tariff that appears. This is influenced by the accuracy and completeness of writing a diagnosis by a doctor on the file claim [28].

Leadership development strategy determines the extent and effectiveness of its staff development[29].

6)   Funding availability (6)

The results of the study by Estri Aditya Pradani, Dewi Lelonowati, and Sujianto (2017) indicated that the root causes of delays in verification of files to IJP (Installation of Financing Guarantee) included the absence of reward and punishment for the doctors in charge who did not complete medical records within 1x24 hour, and the absence of reward and punishment policy for units that did not completely input 100% of data on SIM-RS (Hospital Management System or Hospital Information System) [30]. The only two literature (5,6) have discussed the influence factor of accuracy in coding by the coder, such as:

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1) Experience of being a coder

Farzandipour et al. (2009) suggested that the new coder should improve their coding accuracy by giving more attention to procedure nature and topography to improve their coding quality. In addition, lack of memory-based coding did not improve coding accuracy. Hence, it is recommended that coders consult with physicians about cases in which the coder has limited knowledge [27].

2) Doctor's writing is difficult to read

More readable documentation and avoidance of abbreviations by clinicians are recommended.

3) Notes are incomplete in medical records, especially in operating report [27].

When physicians documentation is unclear or incomplete in the chart, then will make failure to assign codes based on what is documented in the chart and can lead to coding errors as coding can become inaccurate with any missing details. If coding professionals are not clinical staff, misinterpretation probability can be found due to the lack of medical knowledge in specific areas, which can subsequently generate incorrect codes [4].

4) The difficulty of coders to understand ICD

With the transition of the coding system from ICD-9 to ICD-10, additional details will be required to code the clinical conditions and procedures appropriately, and, therefore, the importance of coding compliance will become even higher. Education and training needs for preventing inappropriate or incorrect ICD-10 codes. Investment in training and certification programs for medical coding staff, nurses, physicians, and other healthcare staff who will assign ICD diagnosis and procedure codes is needed[4].

5) Less of teamwork

The collaboration of medical record staff, physician, and paramedic in filling medical resumes is recommended for better codes[21].

This study has many disadvantages as it only analyzes several related studies from limited sources. Ideally, further research can analyze all researches related to coding and INA-CBGs claims with various sources throughout Indonesia.

According to the results of this study, we recommend several actions, namely:
1. The hospital should conduct periodic socialization regarding INA-CBGs and the coding process
2. A joint commitment should be made to improve the quality of coding
3. The hospital should establish a monitoring and evaluation team for the INA-CBG coding process that carries out periodic tasks.
4. The hospital should form a coding team involving all the elements related to coding that received regular guidance in the coding process.
5. The hospital should arrange training schedule on coding systems for the doctors in charge of the patients, verifiers, and coder officers.
6. The hospital should provide reward and punishment for incomplete medical records and resumes as well as coding for the doctors in charge of the patients, verifiers, and coder officers.
7. The hospital should provide incentives for officers related to coding.

8. The hospital should develop a SIM-RS (Hospital Management System or Hospital Information System) that helps the coding team in their work.

CONCLUSION

The study has indicated the factors that influence the amount of INA-CBG claims in hospitals in Indonesia, mainly, the factor of completeness of medical resumes and the factor of accuracy in coding by the coders. The completeness of a medical filling resume which is highly dependent on physician compliance and accuracy coding which is very dependent on the length of time being a coder, doctor's writing, incomplete in medical records, especially in operating reports, the difficulty of a coder to understand the ICD and lack of teamwork.

The doctor has the responsibility to the patients in completing medical resumes and coders in coding is very significant because it should be the focus in solving claims problems. All the human resources who have a role in coding and claims, need to improve their capability on it, through a workshop, or any other education funded by the hospital. Coder certification must be done. Hospital has to develop hospital management information system for acceleration in coding and claim.

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