

The Effect of INA-CBGs System Implementation towards Length of Stay and Coding Error in Ahmad Mochtar Hospital

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Abstract: The main objective of casemix implementation (CI) are to increase efficiency and quality (E&Q) of health care services. Length of Stay (LOS) and Coding Error (CE) are two of indicator of health care E&Q. The study aims was to know the effect of CI to LOS and CE in Ahmad Mochtar Hospital West Sumatera Indonesia. The cross-sectional design was conducted with quantitative and qualitative research. The 390 in-patient medical record (MR) was selected in year 2008 and 2012. The qualitative data were collected through in-depth interviews with doctors and the head of the MR Department, and focus group discussions with coders. Average LOS was $4.56 \pm SD 2.68$ days in 2012 shorter than $5.88 \pm SD 5.99$ days in year 2008. CE in 2012 was 37.9%. lower than 62.1% in 2008. The result of chi-square test showed that significant difference between CE before and after CI. This reflects an increase in health service management through the efficiency of utilization in INA-CBGs.

Keywords: Casemix, INA-CBG, Length of Stay, Coding Error.

1 Introduction

The Ministry of Health of Indonesia has launched a special program to ensure that the poor have access to health care services in the effort to achieve universal coverage by 2019. The implementation of Casemix in Indonesia is based on a special law (Undang-undang No.40) and Minister of Health decree (SK Menkes No. 1663/MENKES/SK/XII/2005) [1]. Hospitals are reimbursed on locally customized Casemix system called INA-DRG which is based on UNU-CBG Casemix grouper. In the first phase of Casemix implementation, the system was used to develop hospital tariff with the objective of to enhancing service efficiency. However it is widely known that Casemix system is also a powerful tool to enhance quality of care.

A number of problems were identified in the early part of Casemix implementation in Indonesia. This includes inadequate basic data for case-mix, poor documentation of diagnosis and procedures as well ineligibile handwriting of doctors in the medical records. Presently is no study carried out in Indonesia to assess the impact of Casemix system implementation on Clinical Coding Errors. On the other side, technical issues in implementation INA-CBGs

payment are not fully understood by doctors and other officers. This leads to efficient implementation of the service but the costs incurred are often bundled because they are not sufficient [2].

Achmad Mochtar Hospital is one of three class B hospital in West Sumatra which are implementing casemix system/INA-DRGs to serve patient management and hospital reimbursement. These policy provided to continue national health reform process towards the provision of an equitable and efficient health services since 2009 to now.

2 Method

A Cross sectional study design was conducted to assess the effect of Casemix system implementation to clinical coding errors in Dr. Achmad Mochtar hospitals in Western Sumatera, Indonesia. 390 in-patients' medical data recorded in both years before and after casemix implemented were involved. Quantitative data were collected from patient's medical record from obstetric and gynecology ward. Chi square test was used to differentiate the LOS and Coding error before and after Casemix implementation. The research was conducted mainly in medical record department. Stratified random sampling was used in this study. Sampling is started by calculating the total number of JAMKESMAS (Health Insurance program for poor people) inpatient in the same period of time. The proportional number of sample of each ward is calculated by number of inpatient in the same time period divided by total number of inpatient of hospital. The sample size was calculated based on Lwanga and Lemeshow [3] scale in hypothesis test for two population proportions is 390 samples.

There were 4 types of study tools used by this study as follows; Inpatient medical record, Data Abstraction Sheet, Checklist for 14 Casemix Variables, and UNU-CBG Groupier.

3 Result

Achmad Mochtar Hospital is located in Bukittinggi City, West Sumatera Province which is Class B type hospital and Referral Hospital for the North West part of Sumatra. Services provided in the form of specialist and sub-specialist, consist of internal medicine, pediatric, surgery, obstetrics and gynecology. The number of average patient visits per year reach 70.623 patient with the highest number of visits in 2013 amount 90,637 patients. For Bed Of Rate (BOR) shows the number of achievements of 74.68% with the number of beds amount 340 pieces. The number of samples at Achmad Mochtar hospital in 2008 and 2012 was 390 each and were female all due to these case only from Obstetry and Gynecolog ward as highest cases among other wards. In the assignment of the patient's age of 390 cases of Achmad Mochtar Hospital in year 2008 was evaluated, most of the patient's age at the 30-39 years covering 147 (37.69%). The second highest of patient's age at the 20-29 years comprising 133 (34.10%). There were 58 (14.87%) of the patient's age in the third highest at 40-49 years. The patient's age of 390 cases in year 2012 were evaluated, the most of the patient's age at 20-29 years covering 181 (46.41%). The second highest of patient's age at the 30-39 years comprising 141 (36.15%). The third highest of patient's age at 40-49 years covering 36 (9.23%).

3.1 Length of Stay (LOS)

Average length of stay for all patient obstetrics and gynecology (Casemix Main Group – O) in Achmad Mochtar Hospital was $5.88 \pm \text{SD } 5.99$ days ($n=390$) in year 2008 and $4.56 \pm \text{SD } 2.68$ days ($n=390$) in year 2012. There was significantly difference between LOS before and after INA-CBGs implementation ($p = 0.000$). Eventhought Average LOS is shorter in year 2012 compared to average LOS in year 2008.

Table 1. Length of Stay in Achmad Mochtar Hospital

Year	LOS								Mean
	Shorter (≤ 5 days)		Normal (6-9 days)		Longer (≥ 10 days)		Total		
	N	%	N	%	N	%	N	%	
2008	249	63.8	89	22.8	52	13.3	390	100	5.83
2012	270	69.2	105	26.9	15	3.8	390	100	4.56
Total	519	66.5	194	24.9	67	8.6	780	100	

$X^2 = 22.602,$ $df = 2,$ $p = 0.0001$

From table 1 the average LOS decrease from 2008 (5.83 days) to 2012 (4.56 days). By chi square statistic test there is also significant difference of LOS (p value = 0.0001). Furthermore, there was increase in the percentage of shorter LOS & normal LOS. In contrast, the percentage of Longer LOS has decreased sharply from 13.3% to 3.8%.

3.2 Coding Error

The percentage of coding error in AMH in 2008 was 62.1% (247/390) higher than coding error in 2012 was 37.9% (151/390). The result of chi-square test is $p_v = 0.0001$ (p value $< 0,05$). It is concluded that there is significant difference between Coding Error before and after implementation of Casemix System as table 2 below;

Table 2. The Coding Error in Achmad Mochtar Hospital

Year	Nos of Coding Error						X^2	df	p-value
	With Error		No Error		Total				
	N	%	N	%	N	%			
2012	151	37.9	239	62.6	390	100	46.302	1	0.0001
2008	247	62.1	143	37.4	390	100			

Qualitative research by In-depth interviews with informants show that doctors lack enough time and have a tendency to complete tasks at hand rather than writing down information in relation to it, which also causes incompleteness of medical record which effect to LOS and coding error. Reinforcement of medical record policies related to INA-CBG is not

conducted regularly which causes doctors, nurses and other medical personnel to not be exposed to in-patients' important information.

4 Discussion

4.1 Length of Stay (LOS)

The results show that there is a relationship between average Length of Stay before the implementation of INA CBGs in RSAM in 2008 and after the implementation of INA CBGs in 2012 with p value = $p = 0.0001$. LOS in 2012 is shorter than in 2008. Based on the average length of patient day care, there was an increase in LOS from 2008 to 2012. The improvement may be associated with an increase in the number of patients in 2012. According to Victorian Auditor - General's Report, ALOS (Average Length of Stay) is the total number of days spent in the hospital divided by the number of admissions, excluding patients being treated and discharged on the same day. In some conditions, the major metropolitan hospitals of LOS numbers reach four times longer than similar hospitals [4]. Reducing hospital length of stay has the potential to be an effective way of containing the growing demand for beds and releasing capacity in the hospital system. There are often variations in length of stay, even for patients with similar conditions, and wide variations in the proportion of patients with extended stays. There are often variations in length of stay, even for patients with similar conditions, and wide variations in the proportion of patients with extended stays [5] [6] (Lewis R et al, 2015). In addition, many clinical and nonclinical factors such as: age, employment, patient condition at discharge can affect LOS [7].

4.2 Coding Error

The analysis results in Achmad Mochtar Hospital and National Stroke Center Hospital indicate a coding error before the use of INA CBGs in 2008 was higher than the previous use of INA CBGs in 2012. The coding error has a significant relationship with the use of INA CBGs in both hospitals (p -value = 0.0001). Research conducted by Nair and Arthur shows the coding of coding codes of jokes with typed code [8]. The percentage of coding error using handwriting is 15% compared to code through typed text of 3%. The results of this research have been in accordance with the expected results. That with the implementation of Casemix system could decrease coding error. This research was in line with research conducted by Zafirah et al. [9] where found that coding errors were occurred due to undisciplined and knowledge of medical officers in filling out of medical records. And is in line with research conducted by Rinda Nurul [10].

According to the Minister of Health of the Republic of Indonesia Number 377/ Menkes/SK/III/2007 on Professional Medical Record Standards and Health Information, a medical recorder must be able to properly assign the disease code and action according to the Indonesian classification (ICD-10) on disease and medical action in service and health management. Inappropriateness during the process of coding can hinder the process of insurance claims caused by improvements to be made to the diagnosis code. The results of research conducted by Karimah et al [11] through interviews, the accuracy of the diagnosis of patients is determined by medical personnel, in this case the doctor. Coder as the coder is

responsible for the accuracy of diagnostic codes that have been determined by medical personnel.

The qualitative results suggests there are several factors that cause the occurrence of coding errors, such as human resources, the accuracy of the diagnosis, training of disease diagnosis code, facilities and workload. The medical recorder in the diagnosis of the disease diagnosis not only codes the diagnosis of the disease, but also communicates to the doctor. Coders' knowledge and skills on the coding system need to be regularly improved to reduce the percentage of errors in this hospital. The hospital needs to institute a training program for coders by the in-house and the outside trainer. Each coder may be trained according to one speciality. By focusing on one speciality, the coder can acquire all coding guidelines and skills in that particular assigned speciality. Coder in the hospital must have the ability and good knowledge about how to codify the diagnosis of disease in accordance with the rules that have been determined. In addition to work support facilities, means of communication in the workplace also need to be considered, such as telephone so that coding officers easily consult with the doctor the author of the diagnosis. Supporting tools in the coding process used are ICD-10 to encode disease diagnoses and ICD 9-CM to encode medical procedures [12], The accuracy of the diagnostic code is also determined by the busyness of the physician who did not have time to write the diagnostic code on the outgoing summary form. The busyness is caused by the work of doctors who must handle patients in the inpatient and in the poly and by filling in the form of a record too much.

5 CONCLUSION

The average length of stay is in year 2012 is shorter than in 2008 and the percentage of coding error rate is decreased after INA-CBGs implementation. In other word, the implementation of casemix INA-CBG system positively effect to the length of stay and clinical coding error. Medical practitioners are required to ensure that their medical records are filled properly in order to obtain full reimbursement. Incomplete filling of medical records is caused by the lack of discipline of the doctors in charge of the patients, lack of optimum Standard Operational Procedures, the absence of reward and punishment and the lack of reinforcement.

6 RECOMENDATIONS

It is suggested that hospitals improve the health providers discipline of filing officers and provide rewards and punishment to filing officers who do not carry out the filing in accordance with the established operational standard procedures.. The hospital needs to provide training programs related to medical record to the medical personnel including physicians, coders and nurses. To maintain data quality, hospital's management can practice reinforcement through supervision carried out by principal investigator on a daily basis to check the completeness and consistency of the medical records.

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