

# Inefficiency CT Scan Simulator Billing as an Audit Initiative of National Health Insurance Claims Administration at Vina Estetica General Hospital

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**Abstract:** A CT Scan Simulator is a tool used to determine the size, shape, and location of a tumor to help the radiotherapy team determine the next treatment plan. Vina Estetica General Hospital is a public hospital that provides CT Scan Simulator services based on the permission of Perka BAPETEN as radiotherapy management and follow-up in malignancy cases. This study uses a descriptive method through a quantitative approach, aiming to describe the inefficiency of CT-Scan Simulator billing used as a support for diagnosis enforcement based on the Indonesian-Case Based Groups (INA CBGs) tariff costs. The technique used was purposive sampling with inclusion and exclusion criteria. Secondary data collection was carried out retrospectively in the form of claim files for the period January 2020 - November 2023 as many as 308 samples were taken randomly. The results showed that there were 283 (83%) CT Scan Simulator billing claims aimed at supporting diagnosis enforcement and resulting in billing inefficiencies in the INA CBGs claim rates being higher.

**Keywords:** Inefficiency; CT Scan Simulator; Claims Administration Audit; Radiotherapy; Malignancy

## INTRODUCTION

Computerized Tomography Scan Simulator is a real-time 3D treatment planning system connected with *Computerized Tomography*. The process performed prior to radiotherapy treatment in determining the size, shape, and location of the tumor (Vikki Harmonay, 2022). CT Scan Simulator in radiation therapy aims to produce high-quality images with 3D representation for dose calculation, target delineation, and organs at risk in the treatment planning process. (Rezaee & Letourneau, 2019).

Based on The regulation of the Head of the Nuclear Energy Regulatory Agency, states that every person or entity that will use an X-ray aircraft must have a license and meet radiation safety requirements. (Perka BAPETEN No. 8, 2011). X-ray aircraft used as radiotherapy support, including

CT Scan simulators, are not used for Diagnostic and Interventional Radiology (Perka BAPETEN No. 2, 2022).

Vina Estetica General Hospital is an RSU with a CT Scan service that utilizes an ionizing radiation source using a Linear Accelerator (LINAC) sub-scope, the source can destroy cancer cells with high energy and accuracy, so it does not damage normal tissues in the surrounding area and can be used for the whole body. According to the license conditions set by BAPETEN, it can only be used as a radiotherapy support simulator unit that is included in the type of external therapy as a broad but effective form of cancer treatment, used in cases of more severe localized disease, thereby blocking the ability of cancer cells to proliferate further and experience death (Koka et al., 2022).

Regulation of the Minister of Health of the Republic of Indonesia Number 26 of 2021 concerning Guidelines for Indonesian Case Base Groups (INA-CBG) in the Implementation of Health Insurance (2021), payment for health services carried out by BPJS Kesehatan in collaboration with Advanced Facilities uses the Indonesian Case Base Groups (INA-CBG) system, which is a method of payment based on relatively similar diagnoses in the form of a codification system grouping of the final diagnosis and actions/procedures that are the output of services, concerning ICD-10 for diagnosis and ICD-9-CM. Performed collectively, billed monthly with supporting documents. (Ardhitya & Perry, 2015). One of the efforts to control quality and control costs can be done by minimizing the occurrence of potential fraud committed intentionally to obtain financial benefits that are not in accordance with the provisions ( (BPJS Kesehatan, 2020), and always carrying out a post-claim verification process and administrative audit of health service claims aimed at testing the correctness of the administration of service accountability that has been carried out by Health facilities and conducting early detection of fraud based on health service claim data, tracing and submitting the results of data analysis on services that are indicated to be not in accordance with standards. (BPJS Kesehatan, 2020)

Preliminary data on the BI (Business Intelligence) application of BPJS Kesehatan Medan Branch Office, it was found that there were billing for CT Scan Simulator services at Advanced Outpatient (RJTL) and Advanced Inpatient (RITL) Vina Estetica General Hospital with non-malignancy cases from the period January 2020 to November 2023, namely 1354 claim files. Based on this background, the author is interested in identifying the inefficiency of CT Scan Simulator claim billing at Vina Estetica Hospital so that it can prevent the occurrence of claim billing for CT Scan services that are not in accordance with administration.

## **METHOD**

This research method uses a quantitative method with a descriptive approach that aims to describe the inefficiency of billing claims for CT Scan Simulator procedure services at Vina Estetica

General Hospital. The data collected was secondary data with the method of observation of documentation of medical record administration, input, and output of INA CBGs claims that have been billed through the Purposive Sampling technique by selecting samples based on certain considerations, namely inclusion criteria: 1) The billing of Advanced Inpatient Simulator CT Scan (RITL) with the diagnosis code of Cerebral Infarction and, 2) All billing for Advanced Outpatient CT Scan Simulator (RJTL) since the service period of January 2020 - November 2023, which is 1354 claim files. Determination of the sample size using the Slovin formula (Sugiyono, 2021). The number of samples obtained is 308 samples which can represent the entire population. The research results will be presented in the form of a description table.

## RESULT

In accordance with the Cooperation Agreement (PKS) of Vina Estetica General Hospital with BPJS Kesehatan, article 3 (three) states that the provision of Advanced Referral Health Services in the form of individual health service efforts that are specialistic or sub-specialistic in nature consisting of Advanced Outpatient, Advanced Hospitalization and Hospitalization in Special Care Spaces.

**Table 1. Overview of CT Scan Simulator Claim Billing Inefficiencies by Service Type  
Vina Estetica General Hospital Bupel January 2020 - November 2023**

Service Type	Number of Cases	Percentage
RJTL	145	47 %
RITL	163	53 %

Table 1 shows that out of 308 samples of CT Scan Simulator billing claims, there were 145 (47%) claims billed to RJTL, and 163 (53%) claims billed to RITL.

In accordance with the Cooperation Agreement (PKS) of Vina Estetica General Hospital with BPJS Kesehatan, article 4 (four) states that hospitals are obliged to serve participants properly in accordance with professional standards and medical service standards, health service procedures in accordance with applicable regulations.

**Table 2: Overview of CT Scan Simulator Billing Inefficiencies by Type of Diagnosis  
Vina Estetica General Hospital Bupel January 2020 - November 2023**

Diagnosis	Number of Cases	Percentage
Diagnosis of Malignancy	62	20 %
Diagnosis of Non-Malignancy	246	80 %

Table 2 shows that out of 308 samples, there were 62 (20%) claims with malignancy diagnoses and 246 (80%) claims with non-malignancy diagnoses.

Based on the provisions of the Head of BAPETEN Regulation stipulated at Vina Estetica General Hospital from 2020 to 2023, the Linear Accelerator (LINAC) radiation source provided serves to destroy cancer cells with high energy and accuracy, so as not to damage normal tissue in the surrounding area and can be used for the whole body. It is suitable for treating tumors in vital and radiation-sensitive areas and can only be given as a support to radiotherapy.

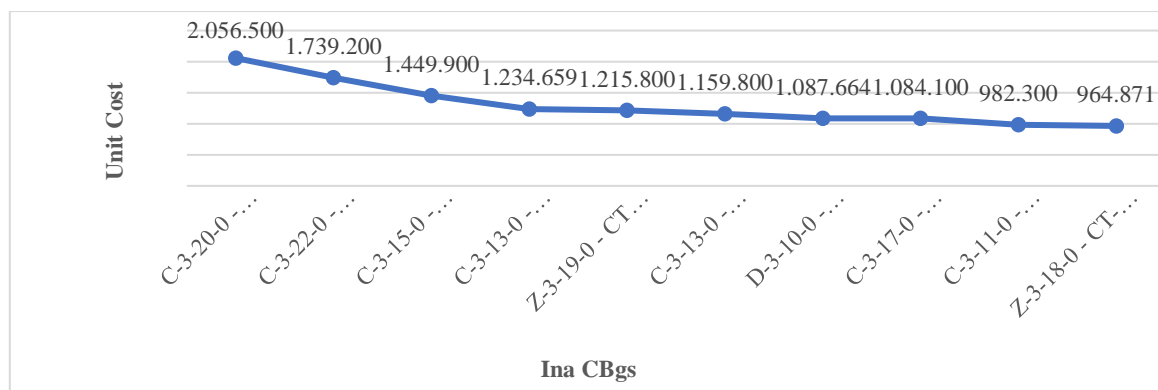
**Table 3. Overview of CT Scan Simulator Billing Inefficiency Based on CT Scan Vina Estetica General Hospital Bupel January 2020 - November 2023**

CT Scan	Number of Cases	Percentage
CT Scanning Simulator	23	7 %
CT_Scan Diagnostic	285	93%

Table 3, shows that out of 308 samples, there were 23 (7%) CT Scan Simulator billing claim files aimed at follow-up radiotherapy services in malignancy cases and there were 285 (93%) claim files aimed at confirming medical diagnoses or disease diagnostics in malignancy and non-malignancy cases.

**DISCUSSION**

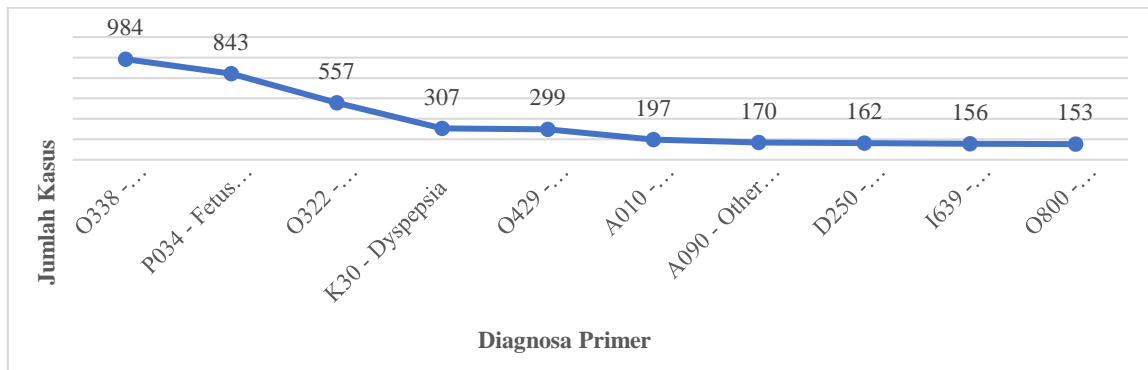
Vina Estetica General Hospital is a type C hospital that provides health services, especially in cancer services in screening and diagnosis, media oncology and chemotherapy, radiation oncology, and oncology in RJTL and RITL.



**Figure 1. Top 10 Costs per CBG's of RJTL RSU VINA ESTETIKA**

Figure 1 shows data on the Top 10 Costs per CBGs of Vina Estetica General Hospital on RJTL services from the service month of January 2020 to November 2023. There was a billing of CBGs code Z-3-18-0 (CT Scan of Head) on procedure code 87.03 (Computerized Axial Tomography of Head) which became the Top 10 Cost per CBGs. and code Z-3-19-0 (Other CT Scan), namely procedures 88.38 (Other Computerized Axial Tomography), 87.41 (Computerized axial tomography

of the thorax), and 88.01 (Computerized Axial Tomography of Abdomen) which are the Top 5 highest cost per CBG's. (BPJS Kesehatan BI Data, 2023).



**Figure 2. Top 10 Cases of Primary Diagnosis of RITL RSU VINA ESTETIKA**

Figure 2, shows the Top 10 Primary Diagnosis Cases Data in Vina Estetica General Hospital services since the service month of January 2020 - November 2023 there is a billing code I63 (Cerebri Infarction) using the CT Scan Simulator examination results, namely on CBGs code G-4-14 (Brain Blood Vessel Injury). and became the highest Primary Diagnosis Top Case (BPJS Kesehatan BI Data, 2023). From these data, it can be concluded that the high billing of claims for CT Scan Simulator procedure services at Vina Estetica General Hospital during the service period January 2020 to November 2023 is due to the fact that the service is provided not only as a follow-up radiotherapy in cases of malignancy diagnoses but also aims to enforce medical diagnoses in cases that require CT-Scan support procedure services.

Based on the Minutes of the 2019 INA CBGs Agreement (point 73), the billing of the Cerebral Infarction diagnosis code requires special attention to the supporting examination of imaging results (CT Scan) in determining the type of infarction including clinical supporting examinations from the Doctor in Charge (DGT) and at point 74 states that cerebral infarction can be established if the CT Scan examination states the results of imaging photos of infarction. (Ministry of Health, 2019). Based on the Minutes of the Meeting of the Third Quality and Cost Control Team (TKMKB) of BPJS Kesehatan Medan Branch, recommending the use of CT Scan Simulator for radiotherapy and diagnostic services in principle is the same, but in its implementation it still refers to the legal aspects of licensing, so that the Hospital management must arrange for a license to use CT Scan Diagnostics (BPJS Kesehatan, 2023). So it can be concluded, that there is a billing of CT Scan Simulator service claims at Vina Estetica Hospital not only given to cases that require radiotherapy follow-up but also to non-radiotherapy cases, causing billing discrepancies with the administrative standards of health service procedures that have been determined.

Discrepancies between real hospital rates and INA-CBGs rates often occur in several hospitals and several cases of certain diseases, one of which is ischemic stroke (Murti Andayani et al., 2017).. In INA-CBGs payment, cases with higher severity will receive higher payment and vice versa. The severity of a case in CBGs is reflected by *cost weight* because in general, the severity of a case will greatly affect the resources or costs required during treatment (Cashin, 2009). CBGs cost weight, the higher the cost of treatment for a CBGs, the greater the cost weight, the higher the severity of a disease, the greater the cost weight. (Fattore & Torbica, 2006). Based on the data, it was found that there was an inefficiency in the billing of CT Scan Simulator services at Vina Estetica General Hospital which was not in accordance with the BAPETTEN regulations applicable to the hospital, namely procedures provided as enforcement of other medical diagnoses in cases of malignancy and non-malignancy. So there is tariff inefficiency in the higher INA CBGs billing. Based on the complexity of the disease code and the more complete the procedures billed, the greater the costs billed.

## CONCLUSION

The CT Scan Simulator service at Vina Estica General Hospital is intended as an irradiation simulation radiology service for malignancy patients as a follow-up to radiotherapy. From the results of tracing and examining the claim files for the service months of January 2020 to November 2023, it was found that there was an inefficiency in billing claims for CT Scan Simulator procedure services that were not in accordance with BAPETTEN regulations and aimed at enforcing diagnoses in malignancy and non-malignancy cases which affected increasing the INA-CBGs claim billing rate to be higher. Based on the above conclusions, the author hopes that there will be a bridging of claims verification application data connected to the Hospital Profile data as a warning when checking or a special application that can be monitored by all employees in checking the suitability of the submitted administrative files as prevention of billing that is not in accordance with administrative provisions.

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