

Analysis of Factors Causing Pending BPJS Health Claims in Cerebral Infarction in Inpatients

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ABSTRACT

Background: Pending BPJS Health claims for inpatients diagnosed with cerebral infarction can cause delays in fund disbursement and impact hospital cash flow. **Objective:** This study aims to analyze the factors causing pending BPJS Health claims for inpatients diagnosed with cerebral infarction using the fishbone diagram method at Hospital X in 2025. **Methods:** This study employed a qualitative descriptive method with a retrospective approach. Data collection was conducted through observation, interviews, and a review of data related to pending BPJS Health claims for inpatients diagnosed with cerebral infarction in 2025. **Results:** The results showed that there were 422 cases of pending claims, consisting of 19 cases (2.73%) related to administrative aspects, 421 cases (60.40%) related to coding aspects, and 257 cases (36.87%) related to medical aspects. The most dominant issues occurred in the coding aspect, particularly regarding the confirmation of new cerebral infarction or sequelae codes, as well as the removal of hemiplegia codes, which are clinical manifestations of cerebral infarction. Fishbone analysis indicates that the causes of pending claims stem from man, machine, method, and material factors, with the dominant factor being differences in perception between coders and BPJS Kesehatan verifiers. **Conclusion:** Therefore, improved coordination, evaluation, and alignment of perceptions between hospitals and BPJS Kesehatan are necessary to reduce the occurrence of pending claims.

Keywords pending claims, BPJS Health, cerebral infarction, fishbone diagram, coding.

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INTRODUCTION

Stroke is a global health emergency that causes significant morbidity and mortality. The Global Stroke Fact Sheet (2022) reported more than 12.2 million new stroke cases and 3.3 million stroke-related deaths worldwide each year. In Indonesia, the prevalence of stroke is 8.3 per 1,000 population, and stroke ranks as the third highest-cost disease under the National Health Insurance (Jaminan Kesehatan Nasional [JKN]) program, with healthcare expenditures reaching IDR 5.2 trillion in 2023 (11). Cerebral infarction (ischemic stroke), classified as ICD-10 code I63, is the most common type of stroke. It results from the sudden obstruction of cerebral blood flow, leading to deprivation of oxygen and nutrients in brain tissue (1,6). The high burden of this disease necessitates complete medical record documentation and accurate diagnostic coding to ensure appropriate reimbursement of BPJS Kesehatan claims.

BPJS Kesehatan, established under Presidential Regulation No. 19 of 2016, finances inpatient healthcare services through the Indonesian Case Base Groups (INA-CBGs) payment system, a diagnosis-related reimbursement mechanism regulated by the Minister of Health Regulation No. 26 of 2021 (19). Each claim submitted is verified by BPJS Kesehatan claim verifiers, who assess the accuracy of diagnostic coding, the completeness of supporting documentation, and the adequacy of medical justification. Claims that do not meet these requirements are returned to the hospital as pending claims, which are defined under BPJS Kesehatan Regulation No. 7 of 2018 as claim files returned for further clarification or correction because they do not yet comply with the required criteria (18). Pending claims delay reimbursement and pose significant financial risks to hospitals by disrupting cash flow and potentially affecting the continuity of healthcare services (8).

Studies conducted in various hospitals have consistently identified diagnostic coding issues as the predominant cause of pending claims. Rahmawati and Febrianti (2025) reported a significant correlation between the accuracy of stroke diagnostic coding and BPJS Kesehatan claim approval rates at a hospital in Surakarta (21). Kurnia and Mahdalena (2022) identified incomplete administrative documentation and inadequate coding quality as the primary causes of pending claims at a hospital in Palembang (12). Yunitasari et al. (2025), using a fishbone analysis approach at a hospital in Samarinda, found that excessive workload, insufficient knowledge of the INA-CBGs guidelines, and incomplete documentation were the main contributing factors (28). Studies from other countries have also confirmed that the quality of diagnostic coding is a critical determinant of claim accuracy and reimbursement outcomes in case-based payment systems (26,3). However, studies focusing specifically on cerebral infarction remain limited in the Indonesian literature, particularly regarding the unique coding challenges associated with distinguishing acute episodes from sequelae, classifying clinical manifestations such as hemiplegia, and documenting supporting diagnostic findings (5).

At Hospital X, cerebral infarction ranked fifth among the top ten inpatient diagnoses in 2025. Preliminary study data showed that between January and December 2025, 422 of the 637 submitted claims (66.2%) were returned as pending claims. An initial review of 10 pending claim files indicated that 100% of the cases were attributable to diagnostic coding issues. This high rate represents a substantial financial and operational burden for the hospital. Although the Ishikawa (fishbone) diagram has been widely validated as an effective root cause analysis tool for quality improvement in healthcare (25,15), its application specifically to cerebral infarction coding and BPJS Kesehatan claim management remains limited in the Indonesian literature.

This study aimed to identify and analyze the factors contributing to pending BPJS Kesehatan claims among hospitalized patients diagnosed with cerebral infarction at Hospital X in 2025 using the Ishikawa (fishbone) diagram. The findings are expected to provide practical recommendations for hospital management and contribute to the academic understanding of coding-related challenges in claim management within the INA-CBGs payment system.

METHODS

This study employed a qualitative descriptive design with a retrospective approach. A qualitative descriptive design was selected to facilitate an in-depth exploration of the processes, perceptions, and structural factors contributing to pending BPJS Kesehatan claims, while the retrospective approach enabled a systematic review of claim records from the 2025 study period (24). The study was conducted at Hospital X, a private Type C hospital located in Sukoharjo Regency, Central Java, Indonesia.

The study population comprised all pending BPJS Kesehatan claim files for hospitalized patients diagnosed with cerebral infarction (ICD-10 code I63) from January to December 2025, totaling 422 cases. Data were collected using three complementary methods: (1) a document review, involving a systematic examination of all 422 pending claim files to classify the causes into three categories (administrative, coding, and medical) using a structured checklist; (2) direct observation of the claim submission workflow, including document preparation, scanning, diagnostic coding, and claim submission; and (3) semi-structured interviews with four key informants directly involved in the claim submission process, namely the head of the medical records department, the document completeness officer, the scanning officer, and the clinical coder. The interview guide was developed based on the 4M framework (man, machine, method, and material).

Data analysis was performed in two stages. First, descriptive quantitative analysis was applied to the checklist data to calculate the frequency and percentage of pending claim causes according to administrative, coding, and medical aspects. Second, qualitative analysis using

the Ishikawa (fishbone) diagram was conducted to synthesize findings from the interviews and observations into root cause categories based on the 4M framework (20). The fishbone method was selected because it has been proven effective in identifying the multidimensional causes of healthcare quality problems (16). Data triangulation through document review, direct observation, and semi-structured interviews was performed to enhance the credibility and rigor of the analysis (4).

RESULTS

1. Workflow of the Inpatient BPJS Kesehatan Claim Submission Process at Hospital X

The inpatient BPJS Kesehatan claim submission process at Hospital X begins with the return of medical records from the inpatient wards to the medical records department. The Medical Record Officer in Charge (PJRM) reviews the completeness of the required documents, including the medical discharge summary, supporting diagnostic examination results, procedure records, and other supporting documents. If any required documents are incomplete, the medical record is returned to the inpatient ward for completion. Once the documentation is confirmed to be complete, the records are scanned and merged into a single electronic file, followed by diagnostic and procedure coding using the ICD-10 and ICD-9-CM classification systems. Subsequently, claim grouping is performed using the INA-CBGs application, and the claim file, together with the required supporting documents, is submitted electronically through the BPJS Kesehatan claim system.

2. Document Requirements for BPJS Kesehatan Claim Submission for Inpatients with Cerebral Infarction at Hospital X

The documents required for submitting BPJS Kesehatan claims for patients diagnosed with cerebral infarction include the Participant Eligibility Letter (Surat Eligibilitas Peserta [SEP]), the Inpatient Admission Order (Surat Perintah Rawat Inap [SPRI]), the medical discharge summary, hospital billing statement, payment receipt, supporting diagnostic examination results (CT scan, MRI, and laboratory tests), the triage form, the inpatient care plan, the outpatient medical summary, the class upgrade consent form, and other supporting documents according to the patient's clinical condition. The completeness of these documents is a fundamental requirement in the BPJS Kesehatan claim verification process.

3. Pending BPJS Kesehatan Claim Data for Hospitalized Patients with a Diagnosis of Cerebral Infarction at Hospital X

Table 1. Distribution of the Causes of Pending BPJS Kesehatan Claims by Aspect among Hospitalized Patients with Cerebral Infarction at Hospital X, 2025

No	Causes of Pending BPJS Kesehatan Claims Based on Aspect	Number of Files	Persentation (%)
1.	Aspect administration and koding	5	1,18
2.	Aspect administration and medical	1	0,24
3.	Aspect koding	160	37,91
4.	Aspect koding and medical	243	57,58
5.	Aspect administration, koding and medical	13	3,08
Total		422	100

**Some cases involved more than one contributing aspect*

During the study period (January–December 2025), a total of 637 inpatient BPJS Kesehatan claims for patients diagnosed with cerebral infarction were submitted at Hospital X. Of these, 422 claims (66.2%) were returned as pending claims. The monthly pending claim rate varied considerably, ranging from a low of 21.5% in October to a high

of 96.1% in March. The distribution of pending claim causes by category is presented in Table 1.

Coding and medical issues were the most common causes of pending claims, accounting for 243 claim files (57.58%), followed by coding issues alone in 160 claim files (37.91%). Combinations of administrative, coding, and medical issues were identified in 13 claim files (3.08%), administrative and coding issues in 5 claim files (1.18%), and administrative and medical issues in 1 claim file (0.24%). Overall, coding-related issues were involved in 421 of 422 pending claim files (99.76%), indicating that coding was the main factor contributing to pending BPJS Kesehatan claims for patients with cerebral infarction. The main coding-related issues included requests from BPJS Kesehatan verifiers to clarify whether cerebral infarction represented an acute episode or a sequela (ICD-10 code I69) and to remove the hemiplegia code (ICD-10 code G81), as hemiplegia was considered a clinical manifestation of cerebral infarction unless it required specific physiotherapy during hospitalization. Administrative issues were identified in 19 claim files, primarily due to repeated admissions within 30 days without adequate supporting documents, incomplete physiotherapy documentation, incomplete ICU and nursing records for mechanically ventilated patients, missing admission-discharge times, and discrepancies between medical records, billing data, and operative reports. Medical issues were identified in 257 claim files and mainly involved clarification of hemiplegia as a manifestation of cerebral infarction, confirmation that management was supported by clinical evidence and diagnosis, and clarification of the management of secondary diagnoses such as hyponatremia, hypokalemia, and mechanical ventilation.

4. Root Cause Analysis Using the Ishikawa (Fishbone) Diagram

a. Factor Man

Human-related factors were primarily attributed to differences in interpretation between hospital coders and BPJS Kesehatan claim verifiers when determining whether a diagnosis should be classified as a new cerebral infarction or as a sequela of stroke. In addition, the diagnosis documented by the attending physician was occasionally insufficiently specific, making it difficult for coders to assign the appropriate diagnostic code. Consequently, BPJS Kesehatan frequently requested clarification before processing the claims.

b. Factor Method

Method-related factors were attributed to the absence of a specific Standard Operating Procedure (SOP) for the inpatient BPJS Kesehatan claim submission process. Currently, claim submission is carried out based on the cooperation agreement between the hospital and BPJS Kesehatan rather than a standardized internal SOP, which may lead to differences in understanding and inconsistencies among staff involved in the claim submission process.

c. Factor Machine

Machine-related factors were associated with technical problems involving the INA-CBGs application and the Hospital Information System (HIS), including slow system response, system errors, and internet connectivity disruptions. These technical issues prolonged the processes of data entry, claim grouping, and claim submission, thereby increasing the risk of delays in BPJS Kesehatan claim submission.

d. Factor Material

Material-related factors were attributed to incomplete supporting documentation, including CT scan and MRI reports, physiotherapy assessment records, ICU documentation, mechanical ventilation records, readmission documentation, and inconsistencies between the supporting documents and the submitted diagnosis. These deficiencies prompted BPJS Kesehatan claim verifiers to

request additional clarification, resulting in the claims being returned as pending claims.

5. Impact of Pending BPJS Kesehatan Claims at Hospital X

Pending claims delay BPJS Kesehatan reimbursements, thereby disrupting the hospital's cash flow. This situation adversely affects the hospital's financial planning, delays operational payments for healthcare services, and increases the workload of medical records and case-mix personnel, who must repeatedly revise and clarify returned claim files. Furthermore, administrative processes become less efficient because staff are required to allocate additional time to resolving pending claims rather than focusing on the submission of new claims.

6. Measures Implemented to Address Pending BPJS Kesehatan Claims at Hospital X

The measures implemented by Hospital X included revising and resubmitting pending claims, enhancing communication and coordination with the attending physicians, conducting a final review of claim files before submission, and performing regular evaluations of pending claim cases.

DISCUSSION

1. Workflow of the Inpatient BPJS Kesehatan Claim Submission Process at Hospital X

The BPJS Kesehatan claim submission process at Hospital X is carried out through several sequential stages, beginning with the verification of the completeness of medical record documentation, followed by document scanning, diagnostic and procedure coding using the ICD-10 and ICD-9-CM classification systems, tariff grouping through the INA-CBGs application, and finally electronic claim submission. Overall, this workflow is consistent with the applicable regulations. However, the findings of this study indicate that vulnerabilities in the claim submission process arise primarily during the diagnostic coding and documentation completeness stages rather than from the procedural workflow itself. The initial verification conducted by the Medical Record Officer in Charge (PJRM), which focuses mainly on the physical completeness of the required documents, has not been sufficient to identify potential coding issues before claim submission. Consequently, the return of claim files by BPJS Kesehatan cannot be prevented proactively. These findings suggest the need to integrate coding accuracy review into the hospital's internal claim verification process before claims are submitted (12).

2. Document Requirements for BPJS Kesehatan Claim Submission for Inpatients with Cerebral Infarction at Hospital X

The documentation required for submitting BPJS Kesehatan claims for patients with cerebral infarction at Hospital X comprises a wide range of administrative and clinical documents, including the Participant Eligibility Letter (Surat Eligibilitas Peserta [SEP]), the Inpatient Admission Order (Surat Perintah Rawat Inap [SPRI]), the medical discharge summary, supporting diagnostic examination reports (CT scan, MRI, and laboratory tests), as well as conditional documents such as the class upgrade consent form. The completeness of these documents is a mandatory requirement in the BPJS Kesehatan claim verification process. The findings showed that 19 claim files were returned as pending due to administrative issues, including discrepancies in SEP information, incomplete ICU documentation and mechanical ventilation records, and inconsistencies between hospital billing records and the medical discharge summary. These findings indicate that, although the documentation requirements are well established, their implementation remains inconsistent, particularly for conditional documents that depend on the patient's clinical condition. Kurnia and Mahdalena (2022) similarly reported that incomplete administrative documentation is one of the factors that consistently contributes to pending claims across healthcare facilities (12).

3. Pending BPJS Kesehatan Claim Data for Hospitalized Patients with a Diagnosis of Cerebral Infarction at Hospital X

The high pending claim rate of 66.2% (422 of 637 claims) indicates a systemic problem that requires immediate attention. Coding-related issues were the predominant cause, being involved in 99.76% of all pending claims, either as the sole cause or in combination with administrative and/or medical issues. The two most frequently identified coding problems were disputes regarding the classification of cerebral infarction as either a new (acute) episode or a sequela, and disagreements over the coding of hemiplegia. According to the ICD-10 guidelines, the sequela code (I69) should be assigned when the residual effects of a disease persist after the acute phase has resolved. However, BPJS Kesehatan claim verifiers apply an additional criterion by considering the patient's previous hospitalization history recorded in the V-Claim system (27). Consequently, hospital coders may encounter situations in which the medical discharge summary documents a new episode of cerebral infarction, whereas the BPJS Kesehatan verifier still requests clarification because of a previous record of the same diagnosis. Regarding hemiplegia, the ICD-10 coding guidelines permit the assignment of code G81 as a secondary diagnosis when the condition receives specific clinical management during hospitalization. In practice, however, BPJS Kesehatan claim verifiers require evidence of active physiotherapy management, arguing that hemiplegia without specific intervention is a clinical manifestation already encompassed by the cerebral infarction diagnosis. This difference in interpretation reflects the absence of a standardized and mutually agreed coding protocol between hospitals and BPJS Kesehatan. Rahmawati and Febrianti (2025) similarly demonstrated that the accuracy of stroke diagnostic coding is directly associated with BPJS Kesehatan claim approval, highlighting the importance of harmonizing coding interpretations to improve claim management (21).

4. Root Cause Analysis Using the Ishikawa (Fishbone)

a. Factor Man

Human-related factors emerged as the most dominant dimension in the fishbone analysis. The primary root cause was the persistent difference in interpretation between hospital coders and BPJS Kesehatan claim verifiers regarding the evaluation of clinical evidence. Hospital coders rely on the patient's medical history, diagnostic imaging findings, and the medical discharge summary to determine whether a case should be coded as a new cerebral infarction or as a sequela of stroke. In contrast, BPJS Kesehatan claim verifiers apply additional criteria based on the patient's hospitalization history recorded in the V-Claim system, which are not always formalized in mutually agreed written protocols. Furthermore, insufficiently detailed diagnostic documentation by the attending physician made it more difficult for coders to assign the appropriate diagnostic code, resulting in repeated requests for clarification from BPJS Kesehatan. These findings are consistent with those of Listyawati and Wijayanti (2022), who identified differences in interpretation between stakeholders as the principal human-related factor contributing to pending National Health Insurance (JKN) claims (13). They are also supported by international evidence showing that differences in coding interpretation standards between hospital coders and healthcare payers are a major source of coding disputes in case-based reimbursement systems (22).

b. Factor Machine

Recurring technical problems with the INA-CBGs application and the Hospital Information System (HIS), including slow system response, upload failures, and system errors, particularly near the monthly claim submission deadline, disrupted the overall claim submission process. As a result, the time available for correcting and

revising claims became increasingly limited, leading to a greater workload for claim management personnel. In addition, the lack of full integration between the HIS and the BPJS Kesehatan claim submission system required staff to perform manual verification, thereby increasing the risk of errors and delays. Kurnia and Mahdalena (2022) likewise reported that technical problems in electronic information systems constitute one of the major barriers to efficient claim processing in healthcare facilities (12).

c. Factor Methode

The absence of a Standard Operating Procedure (SOP) specifically governing the BPJS Kesehatan claim submission process for cerebral infarction represents a significant methodological gap. Without detailed operational guidelines, staff may have differing interpretations regarding document completeness and the management of complex coding cases. This situation is further compounded by the fact that the cooperation agreement between the hospital and BPJS Kesehatan provides only general guidance and does not include specific technical instructions for managing diagnoses with highly complex coding requirements, such as cerebral infarction. Yunitasari et al. (2025) similarly concluded that the absence of formal policies is a major methodological factor contributing to pending claims (28). Furthermore, Fitriani and Putri (2023) demonstrated that formalizing coding agreements between hospitals and BPJS Kesehatan through an official written memorandum significantly reduced the rate of pending claims, indicating that procedural standardization is a key intervention that should be prioritized (7).

d. Factor Material

Incomplete supporting documentation was identified as a material-related factor that directly triggered requests for clarification from BPJS Kesehatan claim verifiers. Missing or delayed CT scan and MRI reports, incomplete physiotherapy assessment records, and the absence of ICU documentation and mechanical ventilation records were recurring problems that contributed to the 257 claim files involving medical-related issues. Although the medical discharge summaries generally contained adequate documentation of the primary diagnosis, they often lacked detailed descriptions of the clinical management of secondary diagnoses, such as hyponatremia and hypokalemia, as well as sufficient evidence to support the appropriateness of the procedures performed. As a result, BPJS Kesehatan claim verifiers frequently requested additional clarification before the claims could be approved. Okezie et al. (2022) emphasized that incomplete and insufficiently specific clinical documentation is a major factor reducing the accuracy of diagnostic coding (17). Similarly, Hatta (2019) highlighted that the completeness and accuracy of medical records constitute the foundation of successful diagnosis-based reimbursement systems, such as INA-CBGs (9). Therefore, systematically improving the quality of clinical documentation by attending physicians should be considered a priority intervention to reduce pending claims.

5. Impact of Pending BPJS Kesehatan Claims at Hospital X

The high rate of pending claims had substantial financial and operational consequences for Hospital X. Delays in BPJS Kesehatan reimbursements resulting from returned claims directly disrupted the hospital's cash flow, thereby affecting financial planning and the timely fulfillment of operational obligations related to healthcare service delivery. Handayani et al. (2020) similarly reported that pending claims consistently pose a significant threat to the financial stability and service sustainability of healthcare facilities (8). From an operational perspective, medical records personnel and the case-mix team experienced a considerable increase in workload because they were required to

repeatedly revise, clarify, and resubmit returned claim files. Consequently, the efficiency of the claim administration process declined, as time and human resources that could otherwise have been devoted to processing new claims were instead redirected to managing the growing number of pending claims.

6. Measures Implemented to Address Pending BPJS Kesehatan Claims at Hospital X

Hospital X has implemented several measures to address pending claims, including revising returned claim files and resubmitting them to BPJS Kesehatan, as well as establishing active coordination with attending physicians to obtain the required clinical clarification. Rechecking document completeness before claim submission and conducting regular evaluations of pending claim patterns have also been implemented as preventive measures. However, despite these efforts, the pending claim rate remaining at 66.2% indicates that a reactive approach alone is insufficient. More systematic and structured preventive strategies are required, including the establishment of routine coordination forums between coders and BPJS Kesehatan claim verifiers, the development of specific SOPs for cerebral infarction claims, continuous improvement of coder competencies through regular training, and strengthening the quality of clinical documentation by attending physicians. Fitriani and Putri (2023) demonstrated that formalizing coding agreements between hospitals and BPJS Kesehatan through written documentation effectively reduced pending claim rates, providing evidence that structured interventions have a greater impact than case-by-case management alone (9).

CONCLUSION

This study concluded that among the 637 inpatient BPJS Kesehatan claims for patients diagnosed with cerebral infarction submitted at Hospital X throughout 2025, 422 claim files (66.2%) were returned as pending claims. The claim submission workflow had been implemented according to the established procedures; however, the main vulnerabilities were identified in the diagnostic coding and documentation completeness stages. Claim submission requirements involved various administrative and clinical documents, and incompleteness of conditional documents was identified as one of the contributing factors to pending claims. The distribution of pending claim causes based on combined aspects showed that coding and medical issues together accounted for 57.58% (243 files), coding issues alone for 37.91% (160 files), administrative, coding, and medical issues for 3.08% (13 files), administrative and coding issues for 1.18% (5 files), and administrative and medical issues for 0.24% (1 file). Overall, coding-related issues were involved in 99.76% of pending claim cases. The two most dominant coding problems were disputes regarding the classification of cerebral infarction as a new episode versus a sequela, and controversies regarding the assignment of hemiplegia as a secondary diagnosis. The fishbone analysis identified four root causes: (1) Man: persistent differences in interpretation between coders and BPJS Kesehatan claim verifiers, along with insufficiently specific clinical documentation by attending physicians; (2) Machine: recurring technical issues in the INA-CBGs system and the lack of full integration with the Hospital Information System (HIS); (3) Method: the absence of a specific SOP for BPJS Kesehatan claim submission for cerebral infarction diagnoses; and (4) Material: incomplete supporting documentation and insufficient specificity of medical discharge summaries for secondary diagnoses. The impacts included delayed reimbursement, disrupted hospital cash flow, and increased workload among claim management personnel. The current resolution efforts have been primarily reactive; therefore, more systematic interventions are required, including routine coordination forums between coders and BPJS Kesehatan claim verifiers, development of specific SOPs, continuous coder training, improvement of clinical documentation quality by attending physicians, and enhancement of system infrastructure to sustainably reduce pending claim rates.

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