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Pending Inpatient Claims in Indonesia's National Health Insurance System: Implications of INA-CBGs Revisions for Claim Reimbursement

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ABSTRACT

Introduction: This study examined pending inpatient claims under Indonesia's National Health Insurance (BPJS) for the July–December 2025 claim period. A simple random sample of 239 pending claims was included, with claim revision followed by final verification. The study aimed to identify administrative, medical, and coding-related factors contributing to pending claims; assess changes in INA-CBGs categorisation and reimbursement following claim revision; and describe the implications for claims management.

Methods: This quantitative descriptive case study retrospectively reviewed pending inpatient claims submitted to BPJS. A simple random sample of 239 eligible claims was selected from 595 pending claims using random-number generation in Microsoft Excel. Data were extracted from claim documents and analysed descriptively to identify changes in Case Main Group (CMG), Severity Level, and reimbursement values before and after claim revision.

Results: Among the 239 pending inpatient claims, administrative factors accounted for 46%, followed by medical factors (37%) and coding-related factors (17%). CMG changed in three claims, whereas Severity Level changed in seven claims, comprising six downgrades and one upgrade. Nine claims showed changes in INA-CBGs reimbursement, with a net decrease of IDR 19,378,800 (26.74%) compared with the pre-revision values.

Conclusion: Pending BPJS inpatient claims had administrative and financial implications extending beyond payment delays to changes in INA-CBGs classification and reimbursement. Strengthening clinical documentation, adherence to appropriate coding practices, and claims governance may improve reimbursement accuracy and support the sustainability of hospital financing.

Keywords: Claims Management; National Health Insurance; INA-CBGs; Pending Claims; Reimbursement

INTRODUCTION

National health insurance (NHI) in Indonesia is a major healthcare financing reform intended to expand universal access to essential health services through a payment mechanism based on Indonesian Case-Based Groups (INA-CBGs). Under this system, hospitals are reimbursed according to case groups determined by diagnoses, procedures, and severity (1). Accurate clinical and administrative documentation is therefore central to reimbursement. Prospective payment through INA-CBGs is intended to improve service efficiency and cost control; however, implementation is challenged by the complexity of claims verification and the compliance requirements that hospitals must fulfil (2,3).

Pending claims are an important challenge in NHI claims management because they cannot be finalised during verification until corrections, clarifications, or additional documentation are submitted. Pending claims may delay hospital revenue and disrupt organisational cash flow. Previous studies have shown that delayed claim payments may constrain hospitals' ability to meet operational needs, allocate resources, and maintain healthcare service quality (4). Prolonged delays may also restrict investment in medical equipment and other services needed to meet community needs (5–7).

Previous studies indicate that pending claims have multiple causes, including administrative, clinical, and coding issues. Frequently reported causes include incomplete administrative documentation, inconsistent clinical information, and coding errors (2,3,8). Limited coding competence and insufficient understanding of BPJS verification requirements may also contribute to claims being returned for correction or reverification (4,8–11). These findings highlight the importance of documentation quality and coding accuracy in supporting efficient claim processing.

The reimbursement process also requires compliance with administrative and coding requirements and with clinical guidelines applied by BPJS. Differences in interpretation during verification may delay claim settlement (12,13), particularly when the services provided do not clearly align with applicable provisions. Such discrepancies can require clarification or revision before payment is approved (14). Previous studies have also noted that regulatory updates may not be implemented uniformly across healthcare facilities. Complete documentation, accurate coding, and timely submission of claims that comply with healthcare financing requirements are therefore interdependent.

Previous studies have consistently identified administrative deficiencies, incomplete clinical documentation, and coding inaccuracies as important contributors to pending claims within case-based payment systems (4,8,11,12). These studies have mainly used descriptive or cross-sectional designs to examine factors associated with claim delays and have recommended improvements in documentation quality and coding accuracy. Other investigations have examined reimbursement governance and DRG/casemix payment systems, highlighting the importance of accurate clinical documentation and coding for payment integrity (15–18). However, previous work has generally focused either on determinants of pending claims or on reimbursement governance, without examining how claim revisions alter INA-CBGs classification and reimbursement outcomes. Evidence linking the causes of pending claims to subsequent changes in Case Main Group (CMG), Severity Level, and payment following claim revision remains limited. This study therefore integrates these variables within a single descriptive analytical framework to characterise the administrative and financial implications of pending inpatient claims.

This issue is particularly relevant because case categorisation forms the basis for hospital payment under the INA-CBGs system. During verification, differences in clinical, administrative, or coding information may be identified and may require claims to be revised and resubmitted. Such revisions may affect CMG classification, Severity Level, and reimbursement tariffs. Examining pending claims can therefore clarify both the factors contributing to pending status and the consequences of revision for case classification and payment.

Evidence on the specific changes in INA-CBGs classification and reimbursement following revision of pending BPJS inpatient claims remains limited. Most previous studies have focused on the administrative and operational causes of claim delays, whereas changes in CMG, Severity Level, and reimbursement values after claim revision are seldom reported systematically. This information is important for understanding the administrative and financial consequences of claims verification within the INA-CBGs payment system.

This study aimed to (1) describe the distribution of the primary causes of pending inpatient claims submitted to Indonesia's National Health Insurance (BPJS), (2) examine changes in Case Main Group (CMG) and Severity Level following claim revision, and (3) assess changes in INA-CBGs reimbursement tariffs associated with revised claims. By integrating administrative, clinical, coding, case-classification, and reimbursement data within a single analytical framework, the study provides a comprehensive description of the consequences of pending-claim revision for claim classification and reimbursement.

METHODS

Study Design

This study used a quantitative descriptive case study design to characterise pending inpatient BPJS claims, identify the main factors contributing to pending status, and describe changes in INA-CBGs classification and reimbursement after verification and revision. The case study examined the claims-handling process at a single advanced referral hospital to limit variation in the claims-management context.

Population and Sample

The unit of analysis was an inpatient BPJS claim file. The study population comprised 595 pending inpatient BPJS claim files reported from July to December 2025. The sample size was calculated using the Slovin formula with a 5% margin of error, yielding a minimum sample of 239 claim files. The sampling frame comprised all pending inpatient claim files recorded in the

hospital claims-registration database. Eligible claim files were selected randomly using the random-number generator in Microsoft Excel. Data extraction was conducted after the BPJS verification and claim-revision process had been completed. Claim files with deficiencies in clinical documentation, administrative documentation, or coding were retained because these deficiencies constituted the study outcomes. Duplicate files, claims that remained unresolved at the time of data extraction, and files with missing key study variables were excluded. During eligibility screening, 239 claim files were initially selected and screened; two duplicate files and three unresolved claims were excluded. Five additional claim files were then selected randomly as replacements, resulting in 244 claim files screened in total and a final analytical sample of 239 eligible claim files.

Variables and Measurement Instruments

Data were collected using an observation guide, a claim-review checklist, and a data-extraction form. The observation guide was used to document the claim-verification process. The completeness of supporting documents was assessed against applicable BPJS requirements. The claim-review checklist was used to evaluate administrative, clinical, and coding elements of each claim, including the completeness of supporting documentation and the accuracy of ICD-10 and ICD-9-CM codes. The data-extraction form recorded the primary cause of each pending claim and changes in CMG, Severity Level, and reimbursement values before and after claim revision. The key variables and data sources are presented in Table 1.

Table 1. Instrument Grid (Key Variables)

Domain	Indicator	Data Source
Administrative	Incomplete or mismatched claim forms	Claim documents, checklist
Coding (technical)	ICD-10 / ICD-9-CM mismatch, double coding	Claim documents, grouper
Clinical/Medical	Inconsistent diagnosis, missing procedures	Medical records, checklist
Claim Impact	Change in CMG group, severity level, claim value	INA-CBGs output, hospital billing data

Data Collection and Quality Control

The data-extraction form was developed from BPJS verification requirements and applicable INA-CBGs provisions to support consistent data extraction. Extracted data were independently rechecked by the research team and the hospital case-mix team. In addition, an independent reviewer with clinical-coding competence who was not involved in claim submission or verification assessed the accuracy of diagnosis and procedure codes. This independent review was used to validate the appropriateness of ICD-10 and ICD-9-CM coding and to reduce potential bias. When the initial extraction and independent review differed, the discrepancy was discussed and a final decision was reached on the basis of the clinical documentation and applicable coding guidelines before the data entered the analysis.

Data Analysis

Pending claims were classified as administrative-related, medical-related, or coding-related, and the proportion of each category was calculated. INA-CBGs grouping results before and after verification were then compared to describe changes in Case Main Group (CMG), Severity Level, and reimbursement values. The change in reimbursement was calculated as the difference between the INA-CBGs tariff before claim revision and the tariff after revised claim submission. The findings were summarised in tables and graphs.

Ethical Approval

This study was approved by the Health Research Ethics Committee of Universitas Sebelas Maret on 21 July 2025 (Approval No. 115/UN27.06.11/KEP/EC/2025). Informed consent was waived because this retrospective study used de-identified secondary claim data and involved minimal risk. The dataset was restricted to the research team, securely stored, and used solely for research purposes. The underlying data cannot be publicly shared due to ethical and institutional confidentiality restrictions, particularly regarding patient-related and sensitive hospital financial and claim information. Findings are reported only in aggregate form.

RESULTS

Factors Contributing to Pending Claims in Inpatient Services

Claims management is important to the financial sustainability of hospitals participating in Indonesia's National Health Insurance (NHI) system. Pending inpatient claims delay payment and may reflect deficiencies in administrative documentation, clinical documentation, or coding. To support the subsequent analyses of INA-CBGs classification and reimbursement, pending inpatient claims were first categorised according to their primary contributing factor.

Analysis of the 239 pending inpatient claims identified three principal categories of contributing factors: administrative, medical, and coding-related issues. Administrative factors accounted for the largest proportion (46%), followed by medical factors (37%) and coding-related factors (17%), as presented in Table 2.

Table 2. Distribution of Pending Inpatient Claims by Primary Cause

Aspect	Number of Cases	Percentage
Administrative	111	46%
Medical	88	37%
Coding	40	17%
Total	239	100%

Administrative issues accounted for 46% of the pending claims and represented the largest category. Within this category, the most common issue was the classification of services submitted as inpatient claims when they were considered outpatient services, accounting for 40% of administrative-related pending cases. This issue arose when the submitted claim classification was not supported by the documentation required for BPJS verification of inpatient versus outpatient status. Medical factors accounted for 37% of pending claims and were commonly related to incomplete clinical documentation or non-compliance with clinical-practice requirements, including those applied to esophagogastroduodenoscopy (EGD) procedures. Coding-related issues accounted for 17% of pending claims and primarily involved inaccuracies in diagnosis or procedure coding that required clarification in relation to ICD-10 and ICD-9-CM standards. These findings indicate that improvements in administrative documentation, clinical documentation, and coding may help reduce pending claims.

Detailed Analysis of Administrative, Medical, and Coding Factors

Identifying the underlying causes of pending inpatient claims is important for improving claims-management processes and compliance with BPJS verification requirements. The following analysis describes the administrative, medical, and coding-related factors identified in the reviewed claims.

Administrative issues were mainly related to discrepancies between the healthcare service provided and the classification submitted for reimbursement. One example involved inpatient claims for procedures such as odontectomy when the available documentation did not fully support inpatient admission under BPJS verification requirements. Other administrative issues included missing supporting documents, such as test reports for patients with renal conditions, which prevented claim validation and required clarification before reimbursement could be approved.

Medical factors were mainly associated with incomplete clinical documentation and non-adherence to national clinical-practice requirements. A common issue was the absence of documentation supporting the clinical need for inpatient esophagogastroduodenoscopy (EGD). Additional deficiencies were identified in pneumonia and anaemia claims, for which incomplete medical records or deviations from established treatment guidance limited verification and contributed to pending status.

Coding-related factors involved inaccuracies in diagnosis and procedure coding. Diagnostic-coding errors commonly included incorrect classification of renal failure, particularly when distinguishing acute from chronic conditions under ICD-10. Procedure-coding errors included incorrect assignment of surgical procedure codes and discrepancies between documented procedures and submitted ICD-9-CM codes. Misinterpretation of coding requirements during verification also contributed to claim revision before reimbursement approval.

Impact of Pending Claims on INA-CBGs Grouping Structure

Resolution of pending claims was associated with changes in the INA-CBGs grouping structure for a small number of claims in 2025. Changes occurred in CMG and Severity Level, whereas Case Group and Case Type did not change. Three claims showed changes in CMG, which categorises cases by organ system, as detailed in Table 3. These changes followed revisions to diagnosis or procedure coding during claim verification.

Table 3. Changes in Case Main Group (CMG)

Case	Coding Component Revised	Documented Coding Revision	CMG Before	CMG After	Severity Before	Severity After
1	Procedure (ICD-9-CM)	86.3 → 40.21	L	D	I	I
2	Clinical verification*	Not documented in the retained records	G	G	II	I
3	Diagnosis (ICD-10) and Procedure (ICD-9-CM)	K81.0 → K20 + A01.0; procedure 45.16 added	B	K	I	III
4	Procedure (ICD-9-CM)	86.3 → 40.21	L	D	I	I
5	Clinical verification*	Not documented in the retained records	N	N	II	I
6	Clinical verification*	Not documented in the retained records	N	N	II	I
7	Clinical verification*	Not documented in the retained records	I	I	II	I
8	Clinical verification*	Not documented in the retained records	A	A	III	I
9	Clinical verification*	Not documented in the retained records	G	G	III	I

*Clinical verification indicates that the claim was reviewed and verified by the clinical team during the BPJS claim verification process; however, the specific diagnosis or procedure codes revised during verification were not available in the retained records.

Three claims experienced changes in Case Main Group (CMG) following claim revision. In Cases 1 and 4, the revised procedure code changed from 86.3 to 40.21, resulting in a CMG change from L (skin, subcutaneous tissue, and breast) to D (haematopoietic and immune system). In Case 3, revisions to diagnosis and procedure coding changed the CMG from B (hepatobiliary and pancreatic system) to K (digestive system). These findings show that revisions to diagnosis and procedure coding during claim verification can change CMG classification.

Severity Level changed in seven of the 239 audited inpatient claims following BPJS verification. Six claims were downgraded from Severity Level II or III to Level I, whereas one claim (Case 3) was upgraded from Level I to Level III. For Cases 2 and 5–9, the retained records indicated clinical verification, but did not contain the original documentation specifying which diagnosis or procedure codes were added, removed, or revised during the verification process. Therefore, the specific basis for the Severity Level changes in these cases could not be retrospectively validated. The current grouper outputs were consistent with the reported Severity Level changes; however, these changes are presented descriptively and are not attributed to specific coding revisions. Overall, the observed Severity Level changes were accompanied by corresponding

recalculations of INA-CBG reimbursement tariffs, with most downgraded Severity Levels associated with lower reimbursement.

Financial Implications and Strategic Considerations for Reducing Pending Claims

Changes in INA-CBGs reimbursement following claim revision may have financial implications at the individual-claim level and illustrate how documentation and coding revisions can affect reimbursement outcomes. We analysed the subset of nine claims for which reimbursement values changed after verification and revision. As shown in Table 4, the net reimbursement value across these nine claims decreased by IDR 19,378,800 (26.74%) compared with the pre-revision values. These findings should be interpreted as illustrative claim-level reimbursement changes within the analysed subset rather than as estimates of the overall financial impact on the hospital.

Table 4. Changes in INA-CBGs Tariffs

Case	INA-CBG Before (IDR)	INA-CBG After (IDR)	Difference (IDR)	Percentage Change (%)
1	6,970,100	7,229,900	+259,800	+3.73
2	22,745,000	12,945,100	−9,799,900	−43.09
3	4,420,900	7,138,600	+2,717,700	+61.47
4	5,240,700	5,436,100	+195,400	+3.73
5	4,453,800	3,716,300	−737,500	−16.56
6	12,929,200	6,919,700	−6,009,500	−46.48
7	4,875,500	3,188,000	−1,687,500	−34.61
8	3,566,100	2,200,000	−1,366,100	−38.31
9	7,263,000	4,311,800	−2,951,200	−40.63
Total	72,464,300	53,085,500	−19,378,800	−26.74

The reimbursement reductions were mainly associated with downgrades in Severity Level; six of the seven claims with Severity Level changes were downgraded (Table 3). The largest reduction was IDR 9,799,900 in Case 2, which was downgraded from Severity Level II to Level I. These claim-level changes illustrate how revisions to coding or limitations in clinical documentation may alter reimbursement after verification.

DISCUSSION

Pending inpatient claims in the analysed sample were attributed to administrative, medical, and coding-related factors, with administrative factors accounting for the largest proportion. These findings should not be interpreted as evidence of systemic organisational failure; rather, they identify areas for further examination within claims-management processes. The observed variation may reflect differences in documentation completeness, clinical interpretation during verification, reimbursement requirements, or coding practices. Similar issues have been reported in studies identifying documentation quality, verification processes, and coding accuracy as contributors to pending claims under prospective payment systems (15–18). Although organisational integration and workflow were not directly evaluated, the observed patterns suggest that improved documentation, coding, and internal quality-control processes may help reduce pending claims. These implications should be interpreted as practice-oriented inferences from the observed claim patterns rather than direct evidence of organisational deficiencies (1).

The findings may indicate potential gaps between internal claims-management processes and BPJS verification requirements; however, organisational governance mechanisms were not directly assessed. INA-CBGs reimbursement depends on standardised clinical documentation and accurate diagnosis and procedure coding because these elements support claim verification, case grouping, and reimbursement determination (19,20). Reducing discrepancies between documentation and coding may decrease claim adjustments, payment disputes, and delays, thereby supporting revenue-cycle performance (17,21,22). Internal verification processes may also contribute to the quality of claim documentation and submissions (23). Clinical documentation therefore serves not only as a record of care but also as evidence supporting claim validity. When documentation does not adequately support clinical justification, differences in interpretation between hospitals and verifiers may be more likely.

This study also shows that claim revision can affect INA-CBGs classification as well as claim status. Several cases illustrated the sensitivity of Case Main Group (CMG) and Severity Level to changes in documentation and coding. Because INA-CBGs classification underpins reimbursement calculation, these changes have implications beyond administrative correction. Revisions identified during verification may change case classification and, in turn, the reimbursement assigned to a claim. This observation is consistent with analyses of casemix-based payment systems showing that changes in coding and clinical documentation can influence case-group assignment and reimbursement (16,24). International evidence also indicates that coding accuracy is important because coding influences case mix, resource-intensity measures, and the distribution of healthcare funds. The present findings extend this evidence by describing claim-level changes that occurred through CMG reclassification and Severity Level adjustment after verification. Pending claims should therefore not be viewed solely as deferred payments, because revision may also change the case classification used for reimbursement (17,25,26).

These findings highlight the role of clinical coding in healthcare financing governance. In prospective payment systems such as diagnosis-related groups (DRGs), diagnosis and procedure codes contribute to the determination of case mix, resource use, and payment. Coding errors may therefore have administrative and financial consequences beyond claim delay or denial, including changes in the reimbursement assigned to a case. International studies emphasise coding accuracy as an important

component of revenue-cycle management and reimbursement auditing because misclassification may contribute to underpayment or overpayment and may create incentives for intentional or unintentional documentation and coding anomalies (15,21). In casemix-based payment systems, reimbursement has also been shown to be sensitive to coding changes (16). The present findings are consistent with evidence that accurate coding is important for INA-CBGs compliance and hospital financial sustainability (17).

Another important issue is variation in how hospitals and BPJS verifiers interpret whether a service has adequate clinical justification. Findings related to EGD claims and several pneumonia claims suggest that verification disagreements may arise not only from incomplete documentation but also from differences in interpreting criteria for reimbursable services under applicable clinical guidance. Claim verification therefore involves the intersection of clinical judgement, coding, and healthcare financing requirements. International evidence indicates that differences in the interpretation of clinical documentation among clinicians, coders, and claims auditors can contribute to reimbursement disputes and claim denials in prospective payment systems (15). Differences between verifier expectations and the documentation produced by clinicians may also indicate a need for closer alignment between clinical-compliance processes and reimbursement governance (21). Coordination among clinicians, coders, case-mix teams, and verifiers may help reduce avoidable interpretive discrepancies.

From an operational perspective, pending claims and changes in reimbursement can create financial uncertainty by delaying payment and altering individual claim values. Previous studies have reported that delayed payments, claim rejections, and deficiencies in clinical documentation can adversely affect cash flow and revenue-cycle management (15, 21). Because the present study was conducted at a single hospital, its findings should not be extrapolated beyond the study setting. Nevertheless, the observed patterns support the practical relevance of accurate documentation, coding, and internal quality assurance for timely claim processing. Strengthening clinical-documentation governance, conducting periodic internal claim audits, and maintaining communication among clinicians, coders, and case-mix teams may help reduce pending claims and improve reimbursement accuracy (27). These suggestions are practice implications derived from the observed data, not evidence of intervention effectiveness.

Study Limitations

Several limitations should be considered when interpreting these findings. First, the study was conducted at a single referral hospital; therefore, the findings reflect the local claims-management context and should not be generalised to other institutions participating in Indonesia's National Health Insurance system. Second, although 239 randomly sampled pending claims were included in the main analysis, changes in INA-CBGs reimbursement after claim revision occurred in only nine claims. The reimbursement analysis should therefore be interpreted as a description of claim-level financial changes rather than an estimate of hospital-wide financial impact. Third, despite independent coding review and verification procedures, professional judgement is inherent in claim classification and verification, and differences in clinical interpretation, coding practice, or BPJS verification may have influenced the observed revisions. Finally, the descriptive case study design was intended to characterise patterns of pending claims and reimbursement changes rather than assess causal relationships. The findings should therefore be regarded as descriptive evidence that may inform future multicentre analytical studies with larger samples and more robust designs.

Recommendations for Future Research

Future studies should use multicentre designs that include hospitals with different ownership models, levels of care, and geographic locations to improve external validity and generalisability. Analytical approaches such as prospective cohort or longitudinal designs may help examine relationships between documentation quality, coding accuracy, claim-verification processes, and reimbursement outcomes. Larger samples of claims with changes in INA-CBGs classification or reimbursement should also be studied to support more robust assessment of the financial consequences of claim revision. Standardised and tested procedures for coding review and claim verification may reduce subjectivity and improve reproducibility across institutions. Mixed-methods studies incorporating interviews with clinicians, coders, case-mix teams, and BPJS verifiers may provide additional insight into organisational, behavioural, and procedural factors associated with pending claims.

CONCLUSION

Administrative, medical, and coding-related issues were the main contributors to pending inpatient claims in the analysed BPJS claim sample, with administrative factors accounting for the largest proportion. In a limited number of claims, revisions to clinical documentation or coding were associated with changes in INA-CBGs classification, including Case Main Group (CMG) and Severity Level, and with changes in reimbursement at the individual-claim level. The findings highlight the importance of accurate documentation and coding for consistent claim verification in the study setting. Broader organisational implications require further investigation and should not be interpreted as evidence of system-level deficiencies.

These findings should be interpreted in light of several limitations. The study was conducted at a single referral hospital and therefore cannot be generalised to other hospitals participating in Indonesia's National Health Insurance system. The main analysis included 239 pending claims, but only nine claims showed changes in INA-CBGs reimbursement after revision. These observations therefore represent claim-level changes rather than estimates of hospital-wide financial effects. In addition, the descriptive case study design does not support causal inference, and differences in claim classification or verification may have influenced the observed findings.

Based on these descriptive findings, strengthening clinical documentation, coding quality, internal claim review, and communication among clinicians, coders, case-mix teams, and BPJS verifiers may represent practical approaches to

improving claims management. However, the effectiveness of these strategies was not evaluated in the present study and should be assessed in future multicentre analytical or prospective studies involving more diverse hospital settings and larger numbers of claims with changes in INA-CBGs classification and reimbursement.

DECLARATIONS

Author contributions: Conceptualization: WM, YTU, MM. Methodology: WM, YTU, MM. Investigation: WM, YTU, MM. Data curation: WM, YTU. Formal analysis: WM, YTU. Writing – original draft: WM. Writing – review & editing: WM, YTU, MM. Supervision: YTU, MM. Project administration: WM.
All authors reviewed and approved the final version of the manuscript and agreed to be accountable for all aspects of the work, ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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