

The Casemix Team's Role in Addressing the Indonesian Coding Standard in the Implementation of INA-CBGs at Toto Kabila Bone Bolango Regional Hospital

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ABSTRACT

Background: The implementation of INA-CBGs requires accurate clinical coding and complete medical documentation because diagnosis and procedure codes are used in the case grouping and claim process. The case-mix team therefore has an important role in ensuring the completeness, accuracy, verification, and coordination required for claims. This study aimed to analyze the role of the case-mix team in implementing the Indonesian Coding Standard (ICS) within INA-CBGs at Toto Kabila Bone Bolango Regional Hospital.

Methods: This study used a descriptive qualitative design. The research was conducted at Toto Kabila Bone Bolango Regional Hospital in May–June 2026. Five informants were selected purposively: the Head of the Medical Records Installation, a case-mix officer, a coder, a medical-record staff member, and a physician. Data were obtained through interviews, direct observation, and documentation. Data analysis involved data reduction, data display, and conclusion drawing with verification through triangulation.

Results: The case-mix team performed medical-record completeness checks, diagnosis and procedure coding, internal verification and validation, and coordination with physicians and medical-record personnel. Coding was guided by ICD-10, ICD-9-CM, the Indonesian Coding Standard, and hospital procedures. However, implementation was constrained by incomplete electronic medical-record data, diagnoses that were not sufficiently specific, the need for clarification with the attending physician, coder workload, limited updating/training, and coordination that was not always optimal. The team responded through repeated verification, clarification with physicians, application of coding SOPs, use of coding guidelines, and strengthening interprofessional communication.

Conclusion: The case-mix team has an important operational and quality-control role in supporting ICS implementation and INA-CBGs claims at Toto Kabila Hospital. Continued improvement in documentation quality, coder competency, periodic coding training and updating, routine audit, and interprofessional coordination is needed to support more consistent coding and smoother claim processing.

INTRODUCTION

The implementation of the Indonesian Case-Based Groups (INA-CBGs) payment system has increased the importance of accurate clinical documentation and coding in Indonesian healthcare facilities. INA-CBGs is a case-based payment mechanism in which patient diagnoses and procedures are classified into specific case groups that determine the reimbursement received by healthcare facilities. Therefore, the accuracy of diagnosis and procedure codes is an essential component of the claim process because coding information serves as one of the main inputs for case grouping and reimbursement calculation. Inaccurate or incomplete coding may result in inappropriate case grouping, claim discrepancies, delayed reimbursement, and potential financial losses for hospitals.

Clinical coding is not merely an administrative process of converting diagnoses and procedures into standardized codes. It requires the accurate interpretation of clinical information documented in the patient's medical record. The World Health Organization (WHO) emphasizes that standardized disease classification systems are important for

recording and analyzing morbidity and mortality information and for supporting healthcare planning, resource allocation, reimbursement, research, and health-service evaluation (World Health Organization [WHO], 2025). Consequently, the quality of coded information is highly dependent on the completeness, clarity, and accuracy of the clinical documentation available to the coder.

Medical records serve as the primary source of information for clinical coding. The documentation must adequately describe the patient's clinical condition, diagnoses, examinations, treatments, procedures, and other relevant healthcare services. In Indonesia, the importance of medical-record quality has become increasingly significant following the implementation of Regulation of the Minister of Health of the Republic of Indonesia Number 24 of 2022 concerning Medical Records, which requires healthcare facilities to implement Electronic Medical Records (EMRs). The regulation emphasizes that clinical information must be documented completely and clearly and that medical-record systems should support various healthcare activities, including information processing and data preparation for healthcare financing claims (Ministry of Health of the Republic of Indonesia, 2022).

The implementation of electronic medical records, however, does not automatically guarantee the completeness or accuracy of clinical information. In practice, coders may still encounter incomplete documentation, diagnoses that are insufficiently specific, inconsistent clinical terminology, or missing information regarding procedures performed. Such conditions may require coders to communicate with physicians or other healthcare professionals to clarify the clinical information before assigning the appropriate codes. Therefore, the accuracy of coding depends not only on the technical competence of coders but also on the quality of documentation and the effectiveness of communication among healthcare professionals.

Previous research has demonstrated that the quality of clinical documentation and coding can directly affect INA-CBGs claims. Opatasari and Nurwahyuni (2018), for example, found problems involving the completeness of medical records and the accuracy of diagnosis and procedure coding in relation to INA-CBGs claim amounts. Their findings demonstrated that discrepancies in coding could produce differences in claim values, indicating that coding accuracy is an important component of hospital financial management. These findings reinforce the need for systematic quality control mechanisms to ensure that clinical information is appropriately documented, coded, verified, and submitted for claims.

Within this process, the case-mix team has a strategic role. The team is involved in reviewing medical-record completeness, assigning diagnosis and procedure codes, verifying and validating coded information, identifying discrepancies, and coordinating with physicians and medical-record personnel. The case-mix team therefore functions not only as a coding unit but also as an important quality-control mechanism in the INA-CBGs claim process. The team must ensure that the information documented in the medical record is consistent with the diagnosis and procedures coded for the patient.

The coding process in Indonesia generally involves the use of standardized classification systems, including the International Statistical Classification of Diseases and Related Health Problems (ICD-10) for diagnoses and ICD-9-CM for procedures, together with applicable Indonesian coding standards and institutional procedures. Consistent application of coding standards is important to reduce variation in coding practices and improve the reliability of coded clinical information. WHO (2025) highlights that standardized classification systems provide a common framework for transforming clinical information into structured health data that can subsequently be used for healthcare administration, reimbursement, epidemiological analysis, and health planning.

In addition to technical coding competence, the competency of medical-record and coding personnel is an important factor in maintaining coding quality. Changes in healthcare regulations, coding guidelines, electronic medical-record systems, and reimbursement policies require personnel to continuously update their knowledge and skills. The Ministry of Health of the Republic of Indonesia has established competency standards for medical-record and health-information professionals, emphasizing the need for professional competence in managing health information and supporting the quality of healthcare information systems (Ministry of Health of the Republic of Indonesia, 2022). Periodic training and updating are therefore necessary to ensure that coders remain capable of applying current coding standards appropriately.

Interprofessional coordination is another important element in the implementation of clinical coding. Coders do not independently determine a patient's clinical diagnosis; rather, they translate documented clinical information into standardized codes. Physicians are responsible for establishing and documenting diagnoses and procedures, while medical-record personnel ensure the availability and management of patient documentation. The case-mix team subsequently reviews and processes this information for coding, verification, and claim submission. When the documentation does not provide sufficient specificity, communication between coders and physicians becomes necessary to obtain clarification. Effective communication can therefore contribute to more accurate coding and reduce discrepancies during the claim verification process.

Nevertheless, the implementation of coding standards within INA-CBGs may face several operational challenges. Incomplete electronic medical-record information, nonspecific diagnoses, differences in interpretation of clinical documentation, high coder workloads, limited opportunities for continuing education, and suboptimal coordination between professional groups may affect the consistency and accuracy of coding. These challenges are particularly important because coding errors can have implications not only for administrative processes but also for the quality of health information used for reimbursement and healthcare management.

The need for continuous verification and quality control is consequently essential. Internal audits, repeated verification of medical records, consultation with physicians, adherence to coding standard operating procedures, and the use of official coding guidelines can help identify and minimize coding discrepancies. The implementation of these mechanisms also requires organizational support, including adequate staffing, continuous professional development, clear standard operating procedures, and effective communication between the case-mix team and clinical personnel.

At Toto Kabila Bone Bolango Regional Hospital, the case-mix team plays an important role in supporting the implementation of the Indonesian Coding Standard (ICS) within the INA-CBGs claim process. However, based on the conditions identified in the study, several challenges remain, including incomplete electronic medical-record information, insufficiently specific diagnoses, the need for clarification with attending physicians, coder workload, limited updating and training, and coordination that is not always optimal. These conditions indicate the need to examine more closely how the case-mix team performs its functions and how it responds to challenges encountered during the coding and claim process.

Understanding the role of the case-mix team is important because the quality of INA-CBGs claims depends on a chain of interrelated processes, beginning with clinical documentation, followed by coding, verification, validation, and claim submission. Weaknesses at any stage may affect the accuracy and efficiency of the overall process. Therefore, examining the implementation of ICS from the perspective of the case-mix team can provide valuable information regarding the practical challenges of coding and the organizational mechanisms used to maintain coding quality.

Based on this context, this study aims to analyze the role of the case-mix team in implementing the Indonesian Coding Standard (ICS) within the INA-CBGs system at Toto Kabila Bone Bolango Regional Hospital. The study focuses on the team's role in medical-record completeness assessment, diagnosis and procedure coding, verification and validation, interprofessional coordination, challenges encountered during implementation, and strategies used to overcome these challenges. The findings are expected to provide practical input for improving documentation quality, strengthening coder competency, conducting regular coding audits and training, and enhancing interprofessional coordination to support more accurate, consistent, and efficient INA-CBGs claim processing.

METHODS

It was intended to obtain information from different professional perspectives involved in the coding and claim process. The inclusion of personnel from both medical-record and clinical backgrounds enabled the study to examine not only the technical aspects of coding but also the coordination and communication required between coders and healthcare professionals.

Data Collection

Data were collected through in-depth interviews, direct observation, and documentation review. These three techniques were used to obtain comprehensive information and to enable triangulation of findings.

In-depth interviews were conducted with the selected informants to explore their experiences and understanding of the case-mix team's role in implementing ICS. The interviews focused on several key areas, including medical-record completeness, diagnosis and procedure coding, verification and validation procedures, the use of coding standards and hospital SOPs, coordination with physicians, challenges encountered during coding, and strategies used to resolve coding-related problems.

Direct observation was conducted to examine the actual implementation of case-mix activities in the hospital. Observation focused on the workflow of medical-record review, coding of diagnoses and procedures, verification and validation, communication between case-mix personnel and physicians, and the procedures applied before claims were processed. Observation was intended to compare the information obtained through interviews with actual practices in the workplace.

Documentation review was used to complement the interview and observation data. Relevant documents included medical-record documentation, coding guidelines, hospital standard operating procedures, case-mix-related documents, and other materials relevant to the implementation of ICS and INA-CBGs claims. The documentation review was conducted to assess the consistency between established procedures and their implementation in practice.

Research Instrument

The primary research instrument was the researcher, supported by a semi-structured interview guide, observation checklist, and documentation review checklist. The semi-structured interview format allowed the researcher to maintain consistency in the main topics while providing flexibility for informants to explain their experiences and provide additional information relevant to the research objectives.

The interview questions addressed the role of the case-mix team, the procedures used in coding diagnosis and procedures, the application of ICD-10, ICD-9-CM, ICS, and hospital SOPs, verification and validation processes,

coordination with physicians and medical-record personnel, coding problems, and efforts to improve coding accuracy.

Data Analysis

The qualitative data were analyzed through three main stages: data reduction, data display, and conclusion drawing and verification. During the data-reduction stage, interview transcripts, observation notes, and documentation were reviewed and organized according to the research objectives. Irrelevant information was excluded, while information related to case-mix activities, coding implementation, verification, coordination, challenges, and corrective actions was retained for further analysis.

In the data-display stage, the relevant information was organized into thematic categories to facilitate identification of patterns and relationships among findings. The main analytical themes included the role of the case-mix team, medical-record completeness, diagnosis and procedure coding, verification and validation, interprofessional coordination, implementation barriers, and strategies for addressing coding problems.

The final stage involved drawing and verifying conclusions. Conclusions were developed based on recurring patterns and relationships identified across the interview, observation, and documentation data. The researcher continuously compared the findings with the original data to ensure that the conclusions accurately represented the conditions observed in the study setting.

Data Validity

The credibility of the findings was strengthened through data triangulation. Triangulation was conducted by comparing information obtained from different informants and different data-collection methods. Information obtained from interviews was compared with direct observations and relevant documentation. In addition, perspectives from the case-mix officer, coder, medical-record staff, physician, and Head of the Medical Records Installation were compared to identify similarities and differences in their descriptions of the coding and claim processes.

Triangulation was particularly important for identifying discrepancies between prescribed procedures and actual practices. For example, information regarding coding procedures obtained from interviews was compared with observed coding activities and applicable hospital SOPs. This process helped strengthen the credibility and consistency of the research findings.

Ethical Considerations

Before data collection, the researcher obtained permission from the relevant authorities at Toto Kabila Bone Bolango Regional Hospital. All informants were informed about the purpose and procedures of the study before participating in the interviews. Participation was voluntary, and informants were informed that the information provided would be used solely for research purposes. The identities of the informants were kept confidential, and the findings were presented in a manner that did not disclose individual participants' personal identities.

RESULTS

The findings of this study indicate that the case-mix team at Toto Kabila Bone Bolango Regional Hospital plays an important role in supporting the implementation of the Indonesian Coding Standard (ICS) within the INA-CBGs claim process. Based on interviews with five informants, direct observations, and documentation review, the role of the case-mix team can be grouped into several major activities: medical-record completeness assessment, diagnosis and procedure coding, internal verification and validation, coordination with physicians and medical-record personnel, and efforts to overcome various obstacles encountered during the coding process.

Medical-Record Completeness Assessment

The first major activity performed by the case-mix team is reviewing the completeness of medical-record documentation before coding and claim processing. The review covers important clinical information, including the patient's diagnosis, supporting examination results, treatment, procedures, discharge summary, and other information required to support the coded diagnoses and procedures.

The findings indicate that medical-record completeness is considered an important prerequisite before the coding process is finalized. When the documentation contains insufficient information, the case-mix team does not immediately assign a final code but first reviews the available information and identifies the aspects that require clarification. This process is particularly important when the diagnosis documented by the physician is not sufficiently specific to determine the appropriate code.

The case-mix team therefore performs a dual function: it processes clinical information for coding while simultaneously acting as a quality-control mechanism for the completeness of medical documentation. The team reviews whether the information recorded in the medical record is sufficiently detailed and consistent with the diagnosis and procedures provided to the patient.

This finding demonstrates that coding quality cannot be separated from the quality of medical-record documentation. Incomplete or unclear documentation may make it difficult for coders to determine the most

appropriate diagnosis or procedure code. Recent research by Yuliani et al. (2024) found a significant relationship between the completeness of medical information and diagnosis-code accuracy in INA-CBGs claims. Their study showed that complete medical information substantially increased the likelihood of accurate diagnosis coding, demonstrating the importance of documentation quality in the claim process.

Diagnosis and Procedure Coding

The second major role of the case-mix team is the coding of diagnoses and procedures based on the information documented in the medical record. The findings indicate that coding activities are guided by established coding references, including ICD-10, ICD-9-CM, the Indonesian Coding Standard, and hospital standard operating procedures.

The coding process begins with reviewing the clinical information documented in the patient's medical record. The coder identifies the main diagnosis and relevant secondary diagnoses and subsequently determines the appropriate procedure codes based on the procedures documented. The coder must ensure that the assigned codes correspond to the documented clinical condition and services provided.

The findings also show that the coding process requires interpretation rather than merely searching for a diagnostic term in a coding book or electronic system. The coder needs to examine the clinical context, supporting information, and documentation provided by the physician. When the information is insufficient or the diagnosis is not specific enough, further clarification may be required.

This is consistent with the broader function of ICD-based classification systems. WHO explains that ICD-coded clinical terms provide an important foundation for health recording and statistics and can support payment systems, service planning, quality and safety management, and health-services research. Therefore, accurate clinical documentation and coding are important not only for statistical purposes but also for healthcare financing and administrative decision-making.

The findings also indicate that the application of coding standards contributes to consistency in coding practices. By referring to established coding guidelines and hospital SOPs, coders have a structured basis for determining codes and reducing subjective interpretation. This is particularly important in an INA-CBGs environment because the diagnosis and procedure codes contribute to case grouping and ultimately influence the claim process.

Verification and Validation of Coding

The third important role identified in this study is internal verification and validation. After the coding process, the case-mix team reviews whether the codes assigned are consistent with the clinical information documented in the medical record.

Verification includes checking the consistency between the diagnosis, supporting examination results, treatment, procedures, and the codes assigned. Validation is also used to identify potential discrepancies before the claim is submitted. When inconsistencies are found, the case may be reviewed again and clarification may be requested from the relevant healthcare professional.

The findings indicate that repeated verification is an important strategy for reducing coding errors. This is especially relevant in cases involving incomplete information or diagnoses that require greater specificity. The case-mix team therefore does not always consider the first coding result as final. Instead, the coding process may involve repeated review until the information is considered adequate to support the assigned codes.

Previous research supports the importance of such quality-control mechanisms. Opitasari and Nurwahyuni (2018) reported that inaccurate coding of primary diagnoses occurred in 21.9% of the medical records examined, while inconsistencies in secondary-diagnosis documentation reached 68.6%. Their study also found that claims generated by hospital coders were, on average, 4% lower than those produced by standard coders. These findings demonstrate that coding accuracy and documentation completeness can have direct implications for INA-CBGs claim values.

The verification process at Toto Kabila Bone Bolango Regional Hospital can therefore be understood as an important control mechanism intended to prevent inaccurate clinical information from progressing to the final claim stage.

Coordination Between Coders and Physicians

Another important finding concerns the coordination between the case-mix team and physicians. The study found that clarification with physicians is sometimes necessary when the diagnosis documented in the medical record is incomplete, unclear, or insufficiently specific for coding purposes.

The coder cannot independently modify or establish a clinical diagnosis. Instead, the coder must rely on information documented by the responsible physician. When clarification is required, communication with the physician becomes an important part of the coding process. This finding demonstrates that coding accuracy is not solely the responsibility of the coder but is the result of a chain of documentation and communication involving healthcare professionals.

WHO's clinician documentation guidance similarly emphasizes that clinical documentation should reflect the patient's clinical condition with an appropriate level of detail. The information documented at the point of care subsequently supports secondary uses such as casemix, health information systems, and other forms of healthcare

data use.

The findings suggest that communication between physicians and coders is particularly important when diagnoses lack specificity. For example, a diagnosis may be documented at a general level while the clinical record contains additional information that could support a more specific classification. In such situations, clarification helps ensure that the final code reflects the clinical information appropriately without allowing the coder to make an unsupported clinical determination.

Previous Indonesian research has also identified physician documentation as an important issue in INA-CBGs coding. Opitasari and Nurwahyuni (2018) reported that physician compliance with documentation standards and the availability of coding training were among factors associated with coding and claim problems.

Therefore, strengthening communication between physicians and case-mix personnel should be regarded as an important component of improving coding quality.

Coordination With Medical-Record Personnel

In addition to communication with physicians, the case-mix team also coordinates with medical-record personnel. This coordination concerns the availability and completeness of patient documentation and the movement of information required for coding and claim processing.

The findings show that medical-record personnel provide an important supporting function because the case-mix team requires access to adequate clinical documentation before coding can be completed. When documentation is incomplete or information is not available in the expected location, the coding process may be delayed.

This finding is consistent with research examining the management of medical records for INA-CBGs claims. A study conducted at a tertiary hospital in Indonesia found that incomplete and inaccurate medical records were a major source of problematic claims. After redesigning the medical-record and claim workflow and strengthening the role of a medical-record/case-mix review team, the proportion of problematic claims decreased from 26% in 2017 to 13% in 2018.

This evidence suggests that the case-mix team should not be viewed as an isolated unit. Its effectiveness depends on how well the medical-record, clinical, coding, verification, and claim processes are integrated.

Challenges in Implementing the Indonesian Coding Standard

Although the case-mix team has an important role, the implementation of ICS at Toto Kabila Bone Bolango Regional Hospital continues to face several challenges. The first challenge is incomplete information in electronic medical records. Electronic systems can facilitate access to information, but they cannot compensate for information that has not been documented by healthcare professionals.

The second challenge is insufficiently specific diagnoses. A diagnosis that is too general may limit the coder's ability to select the most appropriate code. In these circumstances, clarification with the attending physician becomes necessary.

The third challenge is coder workload. High workloads may affect the amount of time available for reviewing medical records, checking supporting documentation, and conducting repeated verification. Coding requires attention to detail, and insufficient time for review may increase the possibility of errors.

The fourth challenge is limited updating and training. Coding standards, healthcare regulations, electronic systems, and claim requirements can change over time. Without periodic training and updating, personnel may experience difficulties in applying current standards consistently.

The fifth challenge is coordination. Although communication between coders, physicians, and medical-record personnel is already performed, the findings indicate that coordination is not always optimal. Delays in obtaining clarification or incomplete communication can prolong the coding and claim process.

These findings are consistent with previous evidence that identified incomplete documentation, physician compliance, limited coding training, and insufficient understanding of the INA-CBGs concept as factors associated with coding problems.

Strategies Used by the Case-Mix Team

The study also identified several strategies used to address the challenges. The first strategy is repeated verification of medical records and coded information. This allows the team to identify discrepancies before the claim is finalized.

The second strategy is clarification with physicians. When documentation is insufficient, the case-mix team communicates with the attending physician to obtain appropriate clarification based on the patient's clinical condition.

The third strategy is consistent application of hospital SOPs and coding guidelines. The use of standardized procedures provides a common reference for coders and helps minimize differences in interpretation.

The fourth strategy is strengthening interprofessional communication. Regular communication between case-mix personnel, coders, physicians, and medical-record staff can facilitate the resolution of documentation problems and reduce delays in the claim process.

These strategies are important because quality improvement in medical-record and coding processes requires more than individual coder performance. Research on medical-record management in Indonesian hospitals has shown that redesigning workflows and establishing a dedicated medical-record/case-mix review process can substantially reduce problematic INA-CBGs claims and improve the efficiency of claim processing.

DISCUSSION

Overall, the findings demonstrate that the case-mix team has a broader role than simply assigning diagnosis and procedure codes. The team functions as an operational, verification, coordination, and quality-control unit within the INA-CBGs claim process. Its activities connect clinical documentation with coding and reimbursement.

The importance of this role can be understood from the relationship between documentation, coding, case grouping, and claims. If clinical documentation is incomplete, the coder may be unable to assign an accurate code. If the code is inaccurate, the case may be grouped incorrectly. If the grouping is incorrect, the claim may require clarification, be returned for correction, or potentially result in an inappropriate reimbursement amount.

This relationship is supported by empirical evidence from Indonesia. Yuliani et al. (2024) demonstrated that complete medical information was strongly associated with more accurate diagnosis coding in INA-CBGs claims. Their study found that complete medical information increased the likelihood of accurate diagnosis coding by more than tenfold compared with incomplete information.

The findings also reinforce the importance of the coder's position as an interpreter of documented clinical information. The coder must apply coding standards while remaining within the boundaries of the information documented by authorized healthcare professionals. Consequently, the coder's competence must be supported by clear documentation from physicians and an organizational environment that facilitates clarification when information is insufficient.

From a health-information perspective, standardized coding is valuable because it transforms clinical information into structured data that can be reused for multiple purposes. WHO notes that ICD-based information supports payment systems, health-service planning, quality and safety management, and research. Thus, improving coding accuracy contributes not only to the immediate claim process but also to the reliability of hospital information used for management and health-service evaluation.

The study further demonstrates that interprofessional communication is a critical component of coding quality. When physicians provide sufficiently detailed diagnoses and procedures, coders can perform their work more efficiently. Conversely, when documentation is incomplete or nonspecific, the coding process requires additional clarification. Therefore, improving coding quality requires shared responsibility among physicians, coders, medical-record personnel, and the case-mix team.

The role of the case-mix team is also important in preventing problems from reaching the final claim stage. Through verification and validation, the team can identify documentation and coding discrepancies before claims are submitted. This preventive approach is preferable to correcting problems only after claims have been returned or rejected. Evidence from an Indonesian tertiary hospital showed that redesigning medical-record and case-mix workflows was associated with a reduction in problematic claims from 26% to 13%, demonstrating the potential value of systematic process improvement.

Another important issue is continuous professional development. Coding is a specialized activity that requires knowledge of classification systems, coding conventions, clinical terminology, documentation requirements, and reimbursement mechanisms. The presence of workload pressures and limited updating or training identified in this study suggests that hospitals need to provide periodic competency development for coding and case-mix personnel. The findings therefore suggest that improving ICS implementation should involve several interconnected interventions. First, the hospital should strengthen the quality and completeness of clinical documentation, particularly the specificity of diagnoses and procedures. Second, periodic coding training and updating should be provided to ensure that coders remain familiar with applicable standards and procedures. Third, routine internal coding audits should be conducted to identify recurrent errors and determine areas requiring improvement. Fourth, communication mechanisms between physicians and case-mix personnel should be strengthened so that clarification can be obtained efficiently. Finally, the hospital should continuously evaluate the case-mix workflow to identify bottlenecks that may contribute to delayed or problematic claims.

In this context, the case-mix team can be positioned as an important quality assurance component of the INA-CBGs system. The team connects clinical documentation, coding standards, verification, and claims administration. Strengthening its capacity can therefore contribute to more consistent coding, better-quality health information, fewer claim problems, and more efficient reimbursement processes.

Overall, the findings at Toto Kabila Bone Bolango Regional Hospital indicate that successful implementation of ICS requires an integrated approach. Coding accuracy cannot be achieved solely by providing coding guidelines. It must be supported by complete clinical documentation, competent coding personnel, effective verification mechanisms, continuous training, appropriate workload management, and strong communication among professional groups. This integrated approach is essential to ensure that coded information accurately represents the clinical services provided and supports a more reliable INA-CBGs claim process.

CONCLUSION

This study concludes that the case-mix team plays a significant operational and quality-control role in supporting the implementation of the Indonesian Coding Standard (ICS) within the INA-CBGs claim system at Toto Kabila Bone Bolango Regional Hospital. The team's responsibilities extend beyond diagnosis and procedure coding to include medical-record completeness assessment, verification and validation of coded information, identification of documentation discrepancies, and coordination with physicians and medical-record personnel. These activities are essential to ensure that the clinical information documented in medical records is appropriately translated into accurate diagnosis and procedure codes for the INA-CBGs claim process.

The findings indicate that the implementation of ICS has generally been supported by the use of ICD-10, ICD-9-CM, Indonesian coding guidelines, and hospital standard operating procedures. However, several challenges remain, particularly incomplete electronic medical-record information, diagnoses that are not sufficiently specific, the need for clarification with attending physicians, coder workload, limited opportunities for periodic training and updating, and coordination that is not always optimal. These factors may increase the complexity of the coding process and potentially affect the consistency and efficiency of INA-CBGs claim processing.

The case-mix team's efforts to address these challenges include repeated medical-record verification, clarification with physicians, adherence to coding SOPs and guidelines, and strengthening communication among healthcare professionals. These mechanisms demonstrate that accurate coding requires an integrated process involving not only coders but also physicians, medical-record personnel, and other professionals involved in the case-mix and claim workflow.

Therefore, continuous improvement is required to strengthen the implementation of ICS and the quality of INA-CBGs claims. Hospitals should prioritize improving the completeness and specificity of clinical documentation, strengthening the competency of coding and case-mix personnel through regular training and updating, conducting routine coding audits, optimizing workload distribution, and establishing more effective interprofessional communication mechanisms. Strengthening these components is expected to improve coding consistency, reduce potential claim discrepancies, support the reliability of hospital health information, and facilitate a more accurate and efficient INA-CBGs claim process.

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- Application of Failure Mode and Effects Analysis in Managing Medical Records for Accuracy of INA-CBGs Health Insurance Claims in a Tertiary Hospital in Indonesia. Penelitian ini menunjukkan pentingnya pembentukan tim review medical record/case-mix dan perbaikan alur kerja untuk menurunkan problematic claims.