



The relationship between consistency in completing inpatient electronic medical records for internal medicine cases and ICD-10 coding accuracy at RSUD H. Moh. Ruslan Mataram City

Eki Ratna Wahyuni¹, Sinta Novratilova²

^{1,2}Health Information Management, Politeknik Indonusa Surakarta, Indonesia

Article Info

Article history:

Received Sep 25, 2026

Revised Oct 1, 2026

Accepted Oct 10, 2026

Keywords:

Coding Accuracy;
Consistency of Electronic Medical
Record Completion;
ICD-10;
Internal Medicine Cases.

ABSTRACT

High-quality documentation must meet criteria for completeness, accuracy, timeliness, and consistency. Incomplete or inconsistent medical records can lead to coding errors. A preliminary study conducted at RSUD H. Moh. Ruslan Mataram City examining a sample of ten inpatient internal medicine medical records from January to February 2026, found that medical record completion consistency was 50% and coding accuracy was 40%. This study aimed to determine the relationship between the consistency of inpatient internal medicine Electronic Medical Record completion and ICD-10 coding accuracy. This was a quantitative study using a correlational method. The sample consisted of 253 inpatient internal medicine medical records. The results showed that 117 records (46.2%) were completed consistently, while 136 records (53.8%) were inconsistent. Regarding coding, 154 records (60.9%) had accurate ICD-10 codes, and 99 records (39.1%) had inaccurate codes. Statistical analysis using the chi-square test revealed a significant relationship between the consistency of inpatient internal medicine EMR completion and ICD-10 coding accuracy (p -value = 0.000). Inconsistencies in medical record documentation can hinder staff in the disease coding process. Inaccurate diagnostic codes result in low data validity and inaccuracies in reports regarding the top ten diseases and morbidity. Improving the consistency of medical record documentation through periodic qualitative analysis and displaying the results on the Hospital Information Management System dashboard, enabling clinical staff to view the findings, complemented by notifications to the attending physician regarding incomplete records, alongside enhancing staff competence through coding training, revising standards for the use of approved and unapproved abbreviations, and conducting periodic evaluations of ICD-10 coding accuracy.

This is an open access article under the CC BY-NC license.



Corresponding Author:

Eki Ratna Wahyuni,
Health Information Management,
Politeknik Indonusa Surakarta,
Jl. K. H. Samanhudi No. 31 Bumi, Kecamatan Laweyan Kota Surakarta, Jawa Tengah, 57142, Indonesia
Email: 25.eki.wahyuni@poltekindonusa.ac.id

1. INTRODUCTION

A hospital is a healthcare institution that provides comprehensive individual healthcare services, including inpatient, outpatient, and emergency care (Minister of health, 2020). The delivery of these healthcare services must be recorded and documented in medical records, in accordance with the Regulation of the Minister of Health of the Republic of Indonesia Number 24 of 2022. A medical record

is a document containing data regarding patient identity, examinations, treatments, procedures, and other services provided to the patient (Minister of health, 2022). The entry of clinical information involves recording and documenting the results of examinations, treatments, procedures, and other healthcare services that have been or will be provided to the patient. Such recording and documentation must be complete and clear, and must be carried out after the patient receives healthcare services, including the name, timestamp, and signature of the healthcare professional providing the service (Minister of health, 2022).

Such documentation is crucial for supporting effective interprofessional communication and sound clinical decision-making (Rahmadiliyani & Wardhina, 2022). High-quality documentation must meet criteria such as completeness, accuracy, timeliness, and consistency (Ayuningtyas et al., 2026). Consistency ensures that the medical record serves as an accurate and complete account (Indradi, 2019). Medical record documentation is carried out comprehensively and in depth, as it plays a vital role in ensuring the accuracy of diagnosis coding (Karinda et al., 2026).

Incomplete or inaccurate medical record documentation can lead to coding errors and impact health data analysis, insurance claim submissions, and health policies and strategies (Arimbawa et al., 2022). A significant issue is the incompleteness of physician diagnoses, particularly during follow-up visits. This information is often not recorded in EMR system, resulting in inaccurate morbidity data. Consequently, the resulting reports are invalid, which can impact healthcare planning and decision-making processes (Wahab et al., 2025).

Inaccurate diagnosis codes result in generated information with low data validity, leading to inaccuracies in disease recapitulation reports and hospital management information used for decision-making (Wariyanti, 2022). A diagnosis code is considered accurate when it aligns with the classifications in ICD-10, reflects the patient's condition, and adheres to established classification rules (Ulum, 2022). Inconsistent medical record documentation can hinder medical record staff in disease coding, delay insurance claim processes due to the need for confirmation from the Attending Physician, and lower hospital accreditation standards regarding medical record management (Ichsan, 2018).

Several studies have examined the relationship between medical record documentation and ICD-10 coding accuracy. The first study found that 45.6% of medical record files had incomplete diagnosis documentation, while 49% were complete. Regarding obstetric cases, ICD-10 coding accuracy was 78.9%, and inaccuracy was 21.1%. A statistically significant relationship ($p < 0.05$) was found between the completeness of diagnosis documentation for third-trimester obstetric inpatients at Premagana General Hospital and the accuracy of diagnosis codes (Arimbawa et al., 2022). The second study that coding accuracy for BPJS patients was 63.3%, while diagnosis coding inaccuracy was 36.7%. Completeness of diagnosis and procedure documentation in medical summaries was 63.3%, with incompleteness at 36.7%. A relationship was identified between the completeness of diagnosis and procedure documentation in medical summaries and coding accuracy, with a p-value of 0.0004 (Haniyah Adinda & Siregar, 2023).

A third study found that the completeness of medical information for appendicitis diagnoses was 38.2%, while the accuracy of the diagnosis codes was 40.9%. A chi-square test yielded a p-value of 0.003; since $p < 0.05$, it was concluded that there is a relationship between the completeness of medical information and the accuracy of diagnosis coding (Yulia et al., 2023). A fourth study reported that 89.3% of medical records were incomplete, with coding inaccuracies of 26.2% for ICD-10 and 32.2% for ICD-9-CM. Analysis results indicated a significant relationship between medical record completeness and the accuracy of ICD-10 and ICD-9-CM coding (Wahyuni et al., 2024). Finally, a fifth study found that 26 documents (38%) contained complete medical information, while 42 documents (62%) were incomplete. Regarding coding accuracy, 47 documents (69%) were accurate and 21 (21%) were inaccurate; the analysis showed no relationship between the completeness of medical information and the accuracy of diagnosis coding for Chronic Kidney Disease (Eka Wardhani et al., 2025).

Although several studies have been conducted on the relationship between medical record documentation and coding accuracy, gaps remain in the existing research. Studies examining the link to ICD-10 coding accuracy have focused on the completeness of medical record entries, the completeness of diagnosis documentation, and the completeness of medical information recorded in the documents. Assessments of medical record completeness consider whether the records are filled out and whether they are complete. Assessments of diagnosis documentation completeness examine whether the recorded diagnoses align with medical terminology. Furthermore, several studies have focused primarily on the impact of diagnosis documentation completeness and ICD-10 coding accuracy on BPJS claim billing.

The novelty of this study lies in its examination of the relationship between the consistency of medical record documentation and the accuracy of ICD-10 coding. Consistency in this context refers to entries that remain stable and unchanged from the time of patient admission through to discharge. This consistency is assessed through a qualitative analysis of medical records based on six components, one of which is the consistency of diagnosis documentation. Furthermore, the study explores the utility of ICD-10 codes not only for service billing but also for morbidity and mortality reporting.

A preliminary study conducted at RSUD H. Moh. Ruslan Mataram City, involving a sample of 10 inpatient medical records for internal medicine cases from January to February 2026 revealed that the consistency of electronic medical record documentation was 50% and the coding accuracy rate was 40%. Furthermore, the completeness of medical summary content has not yet been analyzed. Analyses of medical record completeness are typically conducted to verify the presence or absence of specific medical record forms. To date, no audits or evaluations regarding coding accuracy have been performed; consequently, coding accuracy cannot be measured, nor can improvements be implemented. In accordance with Accreditation Standard MRMIK 9 (Medical Record and Health Information Management) specifically the Assessment Elements, evaluations of diagnosis code usage must be conducted periodically, accompanied by follow-up actions and improvements.

The aim of this study is to determine the consistency of inpatient Electronic Medical Record documentation for internal medicine cases, to assess the accuracy of ICD-10 coding for diagnoses in these cases, and to analyze the relationship between documentation consistency and ICD-10 coding accuracy.

2. RESEARCH METHOD

This study employs a quantitative research design using a correlational method. The correlational method aims to determine the relationship between two or more variables, or serves as a research process that utilizes the magnitude of such relationships to make predictions or estimates (Hartono, 2019). This study utilizes a cross-sectional approach, which involves observing and measuring research variables at a single point in time (Mukhlidah Hanun Siregar et al., 2021).

This study was conducted at the RSUD H. Moh. Ruslan Mataram City from April to September 2026. The study population consisted of electronic medical records of hospitalized internal medicine patients at the hospital during the period of January to February 2026, totaling 682 records. The sample size was calculated using Slovin's formula with a 5% margin of error, resulting in a sample size of 253 medical records. A simple random sampling technique was employed, utilizing a lottery method facilitated by Microsoft Excel. This study examines the consistency of Electronic Medical Record (EMR) documentation for internal medicine cases as the independent variable and the accuracy of ICD-10 coding as the dependent variable. The criterion for "consistent" regarding the medical record completion consistency variable is based on a total score of 32, while "inconsistent" is based on a total score of 0-31. The total score is derived from a qualitative analysis review of six components, with a score of 1 assigned for consistency and a score of 0 for inconsistency.

Data collection involved observation and document review, utilizing research instruments such as a qualitative analysis review form for EMRs, an ICD-10 coding accuracy review form, and an observation checklist, alongside inpatient internal medicine EMRs, Microsoft Excel, and the Statistical Product and Service Solutions (SPSS) software. The hypothesis in this study is the null hypothesis

(Ho), which states that there is no significant relationship between the consistency of electronic medical record documentation for internal medicine cases and the accuracy of ICD-10 coding at RSUD H. Moh. Ruslan Mataram City. The alternative hypothesis (Ha) posits that there is a relationship between the consistency of electronic medical record documentation for internal medicine cases and the accuracy of ICD-10 coding at RSUD H. Moh. Ruslan Mataram City.

Univariate analysis was conducted to determine the frequency and percentage of consistency in electronic medical record documentation for internal medicine cases and the accuracy of ICD-10 coding. Bivariate analysis using the chi-square test was also performed to determine whether a relationship exists between the consistency of electronic medical record documentation for internal medicine cases and ICD-10 coding accuracy. If the p-value is < 0.05 , the alternative hypothesis (Ha) is accepted, indicating a significant relationship between the consistency of electronic medical record documentation and ICD-10 coding accuracy; conversely, if the p-value is ≥ 0.05 , the null hypothesis (Ho) is accepted, indicating no significant relationship between the consistency of electronic medical record documentation for internal medicine cases and ICD-10 coding accuracy.

3. RESULTS AND DISCUSSIONS

RESULTS

a. Consistency of Electronic Medical Record Documentation for Inpatient Internal Medicine Cases

Based on observations of the EMR documentation process in the inpatient ward, it was found that clinical staff complete the EMR in accordance with established Standard Operating Procedures (SOPs). EMR entries are made after providing patient care, and medical records for discharged patients are finalized within 24 hours of the patient being cleared for discharge. Based on the research conducted on 253 Electronic Medical Records (EMR) of internal medicine cases, the following results were obtained.

Table 1. Frequency distribution of electronic medical record (EMR) completion consistency for internal medicine cases at RSUD H. Moh. Ruslan Mataram City

Consistency in Completing the Electronic Medical Record (EMR)	n	%
Consistent	117	46,2
Inconsistent	136	53,8
Total	253	100,0

Based on Table 1, out of 253 internal medicine medical records, 117 (46.2%) showed consistent EMR documentation, whereas 136 (53.8%) showed inconsistent documentation. Thus, the majority of cases exhibited inconsistent EMR documentation.

The consistency of EMR entries for internal medicine cases is assessed based on six qualitative analysis components: the completeness and consistency of the diagnosis; the consistency of diagnosis recording; the consistency of recording procedures performed during care and treatment; the consistency of Informed Consent; the consistency of documentation practices; and the recording of significant incidents that could lead to liability claims during treatment. Table 1 shows that 136 medical records contained inconsistencies in documentation. A qualitative analysis revealed that the highest rate of inconsistency—45.9%—occurred in the sub-component regarding the completeness and consistency of secondary diagnoses. These issues regarding secondary diagnoses were identified by comparing the diagnoses recorded in the Integrated Patient Progress Notes at the end of the treatment period by either the attending physician or a consulting physician with those listed on the medical summary form this comparison revealed discrepancies between the diagnoses in the Integrated Patient Progress Notes and those in the medical summary.

b. Accuracy of ICD-10 Codes for Internal Medicine Diagnoses

Observations indicate that medical record coding staff have applied the Standard Operating Procedure (SOP) for Assigning Disease and Medical Procedure Codes when selecting ICD-10 codes.

When determining ICD-10 codes, staff consult not only the diagnosis listed in the medical summary but also the Integrated Patient Progress Notes to ensure consistency between the two records. If a discrepancy is found between the final diagnosis in the medical summary and the Integrated Patient Progress Notes, the attending physician is consulted for clarification. However, as the confirmation process with the physician is time-consuming, staff frequently assign codes without waiting for a response. Based on the research conducted on 253 Electronic Medical Records (EMR) of internal medicine cases, the following results were obtained.

Table 2. Frequency Distribution of ICD-10 Code Accuracy in Electronic Medical Records (EMR) for Internal Medicine Cases at RSUD H. Moh. Ruslan Mataram City

Accuracy of ICD-10 Codes	n	%
Accurate	154	60,9
Inaccurate	99	39,1
Total	253	100,0

Based on Table 2, out of the 253 internal medicine medical records analyzed, 154 (60.9%) contained accurate ICD-10 codes, while 99 (39.1%) contained inaccurate ICD-10 codes. ICD-10 code accuracy was assessed based on the completeness of the codes including both primary and secondary diagnoses, the correct use of combination codes for closely related diagnoses, the accuracy of the fourth-character diagnosis code selection, and the appropriateness of the ICD-10 codes selected for the patient's condition. The accuracy of these ICD-10 codes was validated by coding experts.

Inaccuracies in ICD-10 coding across 99 internal medicine medical records fell into four error categories: cases left uncoded because the diagnosis was not recorded (44.4%), failure to use combination codes (19.1%), incorrect selection of the fourth character (14.1%), and non-compliance with ICD-10 guidelines (22.2%). For instance, in the assessment section of the Integrated Patient Progress Notes at the end of the care episode, the attending physician recorded the diagnoses as CKD stage V, hypertension, and severe anemia; however, the medical summary listed only CKD stage V and severe anemia. Consequently, the coding staff assigned only ICD-10 codes N18.5 and D63.8, whereas the correct codes should have been I12.0 and D63.8.

Errors in ICD-10 code selection, such as those described above, stem from incomplete diagnosis documentation in the medical summary. Inaccuracies in code selection by staff are caused by diagnoses in the medical summary being incomplete and lacking specificity. Instances still occur where diagnoses recorded in the "Assessment" section of the Integrated Patient Progress Notes at the end of an episode of care are not transcribed into the medical summary; yet, these diagnoses could influence coding accuracy, whether regarding the use of combination codes or the selection of the fourth character.

c. The relationship between the consistency of inpatient Electronic Medical Record documentation for internal medicine cases and ICD-10 coding accuracy

The following are the results of a study on 253 electronic medical records of internal medicine cases.

Table 3. The relationship between the consistency of inpatient electronic medical record documentation for internal medicine cases and ICD-10 coding accuracy at RSUD H. Moh. Ruslan Mataram City

cases and ICD-10 coding accuracy at RSUD H. Moin, Kusian Mataram City								
Consistency in Completing the Electronic Medical Record (EMR)		Accuracy of ICD-10 Codes				Total		P Value
		Accurate		Inaccurate				
		n	%	n	%	n	%	
Consistent		88	75,2	29	24,8	117	100	0,000
Inconsistent		66	48,5	70	51,5	136	100	
Total		154	60,9	99	39,1	253	100	

Cross-tabulation results indicate that within the group with consistent EMR documentation, there were 88 medical records (75.2%) with accurate ICD-10 codes and 29 (24.8%) with inaccurate

codes. Meanwhile, in the group with inconsistent EMR documentation, 66 medical records (48,5%) had accurate ICD-10 codes, while 70 (51,5%) had inaccurate codes.

The accuracy levels of ICD-10 codes across both consistent and inconsistent groups indicate that coding staff, when assigning codes, cross-checked the diagnosis in the medical summary against the final assessment in the Integrated Patient Progress Notes and re-confirmed diagnoses or non-standard abbreviations with the attending physician.

Based on the Chi-Square statistical test results using SPSS software, a p-value of 0.000 ($p < 0.05$) was obtained; consequently, the null hypothesis (H_0) was rejected and the alternative hypothesis (H_a) was accepted. This indicates a significant relationship between the consistency of inpatient EMR documentation for internal medicine cases and the accuracy of ICD-10 coding at H. Moh. Ruslan Regional General Hospital Mataram City.

Discussions

a. Consistency of Electronic Medical Record Documentation for Inpatient Internal Medicine Cases

Observations indicate that the process of completing Electronic Medical Records (EMR) by Clinical Care Professionals and Attending Physicians in the inpatient wards complies with the Mataram City Regional General Hospital Director's Policy Number 800/2111/RSUD/X/2022 regarding Electronic Medical Record Services; this policy stipulates that every patient consultation must be entered into the electronic medical record within a maximum of 24 hours.

The research findings indicate that the consistency of medical record documentation for internal medicine cases was 46.2%, while inconsistency stood at 53.8%. This reveals that the majority of medical records showed inconsistent documentation. Such inconsistency impacts the completeness and accuracy of the medical records. This aligns with the theory proposed by Indradi (2019), which states that consistency supports the quality of medical records as accurate and complete documentation.

Furthermore, the 46.2% consistency rate in completing EMR for internal medicine cases indicates that the medical records for such cases at RSUD H. Moh. Ruslan Mataram City, lack accuracy and completeness. This falls short of the standard set by the Minister of Health Decree Number 129 of 2008 concerning Hospital Minimum Service Standards, which stipulates that the minimum service standard for medical records requires 100% completeness within 24 hours of service completion. Consequently, the observed consistency in EMR completion for internal medicine cases demonstrates that the completeness of medical records does not yet meet the established Minimum Service Standards.

The highest rate of inconsistency in medical record documentation 45.9% was found in the sub-component regarding the completeness and consistency of secondary diagnoses. Incomplete and inconsistent recording of secondary diagnoses in internal medicine cases fails to meet a specific documentation completeness standard set by the U.S. Department of Health and Human Services (HHS) Office of Inspector General (OIG), which requires the inclusion of both past and current diagnoses in the discharge summary (Widjaja & Sugiarsi, 2023).

Incomplete documentation of secondary diagnoses on medical summary forms results in incomplete medical record documentation. If a diagnosis is incompletely recorded yet treatment or procedures are administered, it leads to errors in disease diagnosis coding, specifically regarding secondary diagnoses (Indra et al., 2022). This aligns with the researchers' findings, which showed that 45.9% of medical records for internal medicine cases lacked complete and consistent documentation of secondary diagnoses on the medical summary.

The 45.9% rate of inconsistency and incompleteness regarding secondary diagnoses indicates that the completion of medical records does not fully comply with Article 4 of the Minister of Health Regulation No. 269 of 2008 concerning Medical Records; this article stipulates that the discharge summary must, at a minimum, include a summary of physical and supporting examination results, the final diagnosis, treatment, and follow-up.

Incomplete and inconsistent documentation of the final diagnosis deprives coding staff of the information needed to assign the correct ICD-10 code. Consequently, staff may assign an ICD-10 code that does not match the patient's actual diagnosis, or fail to assign a code altogether because the diagnosis was omitted from the medical summary, even though it was recorded in the Integrated Patient Progress Notes. Inaccurate or incomplete documentation of diagnoses in the EMR violates Article 16 of the Minister of Health Regulation No. 24 of 2022 concerning Medical Records. This article mandates that the recording of clinical information, which encompasses the documentation of examination results, treatments, procedures, and other health services provided or to be provided to the patient, must be complete and clear. Furthermore, the recording of clinical information must be carried out in an integrated manner.

b. Accuracy of ICD-10 Codes for Internal Medicine Diagnoses

When assigning ICD-10 codes, coding staff consult not only the diagnosis listed in the medical summary but also the final assessment in the Integrated Patient Progress Notes to ensure consistency between the two. This aligns with Hatta's (2011) theory, which posits that the inpatient diagnosis coding process must always begin with a thorough review of the patient's medical record. It is essential for the coder to gain a clear, comprehensive understanding, based on the medical record documentation, of the issues and care the patient received, including the discharge summary (Hatta, 2011).

The ICD-10 coding accuracy rate of 60.9% indicates that the majority of cases have accurate ICD-10 codes, although a significant number of cases still involve inaccurate coding. This aligns with the fact that accurate coding requires complete and correct medical records, including the physician's documentation of the diagnosis (Hatta, 2013).

Several errors lead to inaccurate ICD-10 coding in internal medicine medical records—such as failure to code due to an unrecorded diagnosis, failure to use combination codes, incorrect selection of the fourth character, and non-compliance with ICD-10 guidelines. For instance, in the "Assessment" section of the Integrated Patient Progress Note at the end of the care episode, the attending physician recorded the diagnoses as CKD stage V, hypertension, and severe anemia; however, the medical summary listed only CKD stage V and severe anemia. Consequently, the coder assigned only ICD-10 codes N18.5 and D63.8, whereas the correct codes should have been I12.0 and D63.8. This represents an error involving both a failure to code due to an incomplete diagnosis and an incorrect choice of combination codes.

The issue of incomplete diagnosis documentation—resulting in the failure to assign an ICD-10 code—is supported by research indicating that a primary cause of inaccurate procedure coding is a lack of detail in medical documentation, combined with coders' suboptimal understanding of the coding structure and logic within ICD-9-CM (Anton Susanto et al., 2025). Other studies further state that inaccuracies in diagnosis or procedure coding often stem from a mismatch between clinical documentation and the coder's understanding of coding standards, such as ICD-10 for diagnoses and ICD-9-CM for procedures (Puspitasari et al., 2024).

Secondary diagnoses, comorbidities, and complications must be coded for hospital planning and billing purposes. While the primary code is used for morbidity reporting, all these conditions must be recorded and coded for storage to meet broader local requirements (Hatta, 2011). This study revealed an ICD-10 coding inaccuracy rate of 39.1%, resulting from either the assignment of incorrect primary codes or a failure to code cases due to incomplete diagnosis documentation. Such inaccuracies impact the cumulative totals for these codes in reports on the top ten diseases and inpatient morbidity. These findings align with research by (Utami, 2015) which emphasizes the necessity of adhering to ICD-10 standards to ensure coding accuracy; accurate codes are essential for indexing disease records, generating national and international morbidity and mortality reports, analyzing healthcare costs, and conducting epidemiological and clinical research.

Discrepancies in the cumulative count of an ICD-10 code within a report affect the quality of the resulting data and information. Reports such as the top 10 inpatient diseases, inpatient morbidity

statistics, and SIRS Online data become invalid, thereby impacting hospital management's internal policies and decision-making processes.

c. The relationship between the consistency of inpatient Electronic Medical Record documentation for internal medicine cases and ICD-10 coding accuracy.

Based on the results of the Chi-Square statistical test using SPSS, a p -value of 0.000 ($p < 0.05$) was obtained; therefore, H_0 was rejected and H_a was accepted. This indicates a significant relationship between the consistency of Electronic Medical Record documentation for inpatient internal medicine cases and the accuracy of ICD-10 coding at RSUD H. Moh. Ruslan, Mataram City.

These results align with the study conducted by Yulia et al. (2023) titled "The Relationship Between the Completeness of Medical Information in Forms RM A-1, RM I-1, and RM L-8 and the Accuracy of Appendicitis Diagnosis Coding in Inpatient Medical Records at Dr. Reksodiwiryono Level III Hospital, Padang." That study found that medical information regarding appendicitis diagnoses was incomplete in 68 cases (61.8%) and complete in 42 cases (38.2%). Regarding coding accuracy, 65 cases (59.1%) showed inaccurate appendicitis diagnosis codes, while 45 cases (40.9%) showed accurate codes. A Chi-square test yielded a p -value of 0.003; since this value is less than 0.05, the null hypothesis (H_0) was rejected, leading to the conclusion that there is a relationship between the completeness of medical information and the accuracy of diagnosis coding, indicating an association between the dependent and independent variables.

Based on research by Karinda et al. (2026), factors contributing to diagnostic coding inaccuracies include coders' limited mastery of ICD-10 guidelines, illegible physician handwriting regarding diagnoses, incomplete medical records, and hospital work systems and procedures that are not functioning optimally. It is evident that ICD-10 coding inaccuracies by coders at RSUD H. Moh. Ruslan, Mataram City, stem from incomplete and inconsistent diagnostic documentation by physicians and incomplete medical records.

The accuracy of ICD-10 codes assigned by coding staff is inextricably linked to the consistency of medical record documentation—specifically regarding completeness and diagnostic consistency. Research (Ichsan, 2018) indicates that inconsistent medical record documentation hinders staff in disease coding, delays insurance claim processes due to the need for confirmation with the attending physician, and lowers hospital accreditation standards regarding medical record management.

According to the researcher's analysis, complete and consistent medical record documentation serves as a source of information that assists coding staff in accurately assigning ICD-10 codes, covering primary diagnoses, secondary diagnoses, complications, and comorbidities. The accuracy of ICD-10 coding plays a crucial role in compiling disease morbidity reports and serves as a basis for management decision-making. Greater consistency in EMR documentation correlates with a higher proportion of accurate ICD-10 codes; specifically, coding accuracy reached 75.2% for consistently documented records, compared to 48.5% for inconsistently documented ones.

4. CONCLUSION

Based on a study of 253 electronic medical record (EMR) for internal medicine cases, it was found that 117 records (46.2%) showed consistent EMR documentation, while 136 records (53.8%) showed inconsistent documentation. A total of 154 internal medicine medical records (60.9%) had accurate ICD-10 codes, and 99 internal medicine medical records (39.1%) had inaccurate ICD-10 codes. There is a significant relationship between the consistency of completing Electronic Medical Records (EMR) for inpatient internal medicine cases and the accuracy of ICD-10 coding with p -value 0.000 (p -value < 0.05). The greater the consistency in EMR completion, the higher the proportion of accurate ICD-10 codes.

Recommendations for improving the quality and consistency of medical record documentation include conducting periodic quantitative and qualitative analyses of medical records and displaying the results on the Hospital Information System dashboard, allowing clinical staff to

view the findings directly. Additionally, a report layout for medical record incompleteness should be designed within the Hospital Information System, incorporating notifications regarding incomplete records to the attending physician. Generating valid and accurate reports specifically those covering the top ten inpatient diseases, inpatient morbidity, and SIRS Online data requires accurate ICD-10 coding. ICD-10 coding accuracy needs to be improved by enhancing the competence of coding staff through initiatives such as coding workshops, revising standards for the use of approved and unapproved abbreviations, and conducting periodic evaluations of coding accuracy.

ACKNOWLEDGEMENTS

The author extends their gratitude to Politeknik Indonusa Surakarta, RSUD H. Moh. Ruslan Mataram City, their beloved family, and all those who assisted with this research process from start to finish.

REFERENCES

- Anton Susanto, Galih Maheswari Candraningtyas, & Agus Trijono. (2025). Akurasi Pengkodean Diagnosis dan Prosedur Medis serta Implikasinya terhadap Klaim JKN di RSUD Pandan Arang. *Jurnal Ilmiah Kedokteran Dan Kesehatan*, 4(3), 306–317. <https://doi.org/10.55606/klinik.v4i3.4610>
- Arimbawa, I. W. G., Putu, N., Yunawati, L., Ayu, I., & Feby, P. (2022). Hubungan Kelengkapan Penulisan Diagnosis terhadap Keakuratan Kode ICD-10 Kasus Obstetri Triwulan III Pasien Rawat Inap di RSU Premagana. *Jurnal Manajemen Informasi Kesehatan Indonesia*, 31–35. <https://doi.org/10.33560/jmiki.v10i1.370> rekam
- Ayuningtyas, M., Abdul Muchlis, H., Anggita Temesvari, N., Studi Sarjana Terapan Manajemen Informasi Kesehatan Universitas Esa Unggul, P., & Author, C. (2026). Perancangan Instrumen Audit Kualitas Dokumentasi Klinis Kasus Non Bedah Di Rumah Sakit Ukrida. *Jurnal Kesehatan Masyarakat*.
- Eka Wardhani, E. D., Informasi Kesehatan, M., Mitra Husada Karanganyar Jl Brigjen Katamso Barat, Stik., Papahan Indah, G., Tasikmadu, K., Karanganyar, K., & Tengah, J. (2025). Hubungan Kelengkapan Informasi Medis dengan Keakuratan Kode Diagnosis Chronic Kidney Disease (CKD) di RSUD dr. Soedono Madiun. *Indonesian Journal of Health Information Management (IJHIM)*, 5(1), 39.
- Haniyah Adinda, S., & Siregar, R. (2023). Hubungan Kelengkapan Diagnosis Dan Tindakan Pada Resume Medis Dengan Ketepatan Koding rawat Inap Pasien BPJS Di Rumah Sakit Umum Sembiring Tahun 2022. *Kesehatan Deli Sumatera*, 1(1). <https://doi.org/10.47709/cnapc.xxxx>
- Hartono. (2019). *Metodologi Penelitian*. Zanafra Publishing.
- Hatta, G. (2011). *Pedoman Manajemen Informasi Kesehatan Di Sarana Pelayanan Kesehatan (Revisi)* (Revisi). UI Press.
- Hatta, G. (2013). *Pedoman Manajemen Informasi Kesehatan Di Sarana Pelayanan Kesehatan*. Universitas Indonesia.
- Ichsan, J. (2018). Tinjauan Kekonsistensian Penulisan Diagnosa dalam Mendukung Kualitas Rekam Medis di Rumah Sakit Bhakti Mulia. *Universitas Esa Unggul*, 3(4), 12–69.
- Indra, Yulia, Y., & Wirman. (2022). Tinjauan Kelengkapan Pengisian Formulir CPPT Rawat Inap Dengan Ketepatan Diagnosis Penyakit Berdasarkan ICD-10 Di RSJ. HB. Saanin Padang Tahun 2022. *Ensiklopedia of Journal*, 4(2022). <http://jurnal.ensiklopediaku.org>
- Indradi, R. (2019). *Rekam Medis* (2nd ed.). Universitas Terbuka.
- Karinda, N. M., Novratilova, S., Kurniawan, A. W., Putri, N. D., Santosa, R., Setiyawan Valentino, R., & Ramadhani, G. (2026). Analisis Faktor Penyebab Ketidakakuratan Kode Diagnosis Klaim BPJS Di Rumah Sakit. In *Jurnal Ilmiah Kesehatan Diagnosis* (Vol. 21).
- Minister of health, R. I. (2020). *Peraturan Menteri Kesehatan Republik Indonesia Nomor 3 Tahun 2020 Tentang Klasifikasi dan Perizinan Rumah Sakit*.
- Minister of health, R. I. (2022). *Peraturan Menteri Kesehatan Republik Indonesia Nomor 24 Tahun 2022 Tentang Rekam Medis* (24).
- Mukhlidhan Hanun Siregar, M. K. ., Dr. Ratna Susanti, M. P., Dr.dr.Ratna Indriawati, M. K., Ns. Yuanita Panma, M.Kep., Ap.Kep., M., Ns. Dewi Yuliani Hanaruddin, M. K., Ns. Ardian Adhiwijaya, M. K., Hairil Akbar, S.K.M., M. E., Agustawan, D. A.-K., Apt.Dhanang Prawira Nugraha, M. F., & Dr.Reno Renaldi, S.K.M., M. ke. (2021). *Metodologi Penelitian Kesehatan Mukhlidhan Hanun Sirega*. Yayasan Penerbit Muhammad Zaini.
- Puspitasari, S., Hidayat, A. D., & Pangestuti, A. (2024). Analisis Keakuratan Kodifikasi Diagnosis dan Tindakan dengan. *Procedia of Engineering and Life Science Vol. 7* 2024.
- Rahmadiliyani, N., & Wardhina, F. (2022). Sosialisasi Pengisian Lembar Catatan Perkembangan Pasien Terintegrasi pada Perawat. *Jurnal Pengabdian Masyarakat Bestari (JPMB)*, 378.
- Ulum, M. (2022). Analisis Penyebab Ketidakkelengkapan Pengisian Resume Medis Pasien Rawat Inap Rsud

- Kanjuruhan Malang. *Journal of Medical Records and Health Information*, 3(1), 29–33. <https://doi.org/10.58535/jrmik.v3i1.21>
- Utami, Y. T. (2015). Hubungan Pengetahuan Coder Dengan Keakuratan Kode Diagnosis Pasien Rawat Inap Jaminan Kesehatan Masyarakat Berdasarkan ICD-10 Di RSUD Simo Boyolali. *Infokes*.
- Wahab, S., Humairoh, L., dan Informasi Kesehatan, R., & Piksi Ganesha Bandung, P. (2025). *Analisis Pengolahan Data Morbiditas Guna Menunjang Mutu Pelaporan Rawat Inap di Unit Rekam Medis RS Hermina Arcamanik* (Vol. 10, Number 2). Online. <http://jurnal.uimedan.ac.id/index.php/JIPIKI> [Journalhomepage:http://jurnal.uimedan.ac.id/index.php/JIPIKI](http://jurnal.uimedan.ac.id/index.php/JIPIKI)
- Wahyuni, A., Khumaira, N. F., & Sisak. (2024). Hubungan Kelengkapan Rekam Medis Terhadap Akurasi Pengkodean ICD-10 dan ICD-9. *J-REMI*.
- Wariyanti. (2022). DOI: <http://dx.doi.org/10.33846/sf13311> Ketepatan dan Kelengkapan Informasi Medis dalam Kaitannya dengan Keakuratan Kode Diagnosis Maya Weka Santi. *Jurnal Penelitian Kesehatan Suara Forikes*, 13(2), 630–635.
- Widjaja, L., & Sugiarsi, S. (2023). *Audit Rekam Medis : Melalui Analisis Kualitatif*. APTIRMIK.
- Yulia, Y., Oktamianiza, O., Putri, K. A., Putra, D. M., Ramadhani, R., & Sandony, A. (2023). Hubungan Kelengkapan Informasi Medis Pada RM A-1, RM I-1 dan RM L-8 dengan Keakuratan Pengkodean Diagnosis Appendic Pada Rekam Medis Rawat Inap di RS. TK. III dr. Reksodiwiryono Padang Tahun 2021. *Jurnal Rekam Medis Dan Informasi Kesehatan*, 6(1), 43–51. <https://doi.org/10.31983/jrmik.v6i1.9192>