# CODIFICATION OF INPATIENTS ELECTRONIC MEDICAL RECORDS TO SUPPORT THE ACCURACY OF THE MAIN CONDITIONS IN HOSPITAL X

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## ABSTRACT

*The purpose of this study was to analyze the coding of inpatients related to the determination of the main conditions of inpatients at hospital X. The results of the study showed that the main conditions were not correct as many as 17 (17%) and the correct main conditions were 83 (83%). The cause of the inaccuracy of coding was the new implementation of the electronic medical record application at hospital X and also the lack of thoroughness of doctors in inputting diagnoses into the electronic medical record application and the incomplete number of characters in the electronic medical record, based on the results of the study conducted by the researcher concluded that the accuracy of the coding of the main conditions of inpatients at Hospital X has been running well. However, there are still some shortcomings that occur in the electronic medical record application at Hospital X. The researcher's suggestion is to hold a complete system update and also be more careful of doctors and coders in inputting diagnoses into the electronic medical record application so that it will minimize the occurrence of inaccurate coding.*

***Keywords: Codification, Electronic medical records, Main conditions***

## INTRODUCTION

A country's welfare can be seen from several factors, one of which is health. The level of health of a region can be measured by looking at the morbidity/illness rate.

Morbidity can be interpreted as the morbidity rate, which includes both incidents and prevalence of disease and describes the occurrence of the disease over a certain period. The higher the morbidity, the worse the level of public health. The morbidity rate can reflect the actual health condition. Based on research conducted by health experts, morbidity is caused by neonatal respiratory distress syndrome, tuberculosis, and diarrhea.

Based on the explanation above, morbidity can be caused by infectious diseases such as tuberculosis, diarrhea, dengue fever, etc. [1]

In the application of statistical science, sometimes some problems arise when collecting data as a whole (population) or what is known as a census. Collecting population data requires a lot of time and money, therefore data collection is designed on part of the population known as a sample.

Statistics are facts that are used as images, to achieve goals, the images need to be relevant and reliable. Statistical preparation involves the collection, analysis, interpretation, and presentation of facts as numbers.

Health statistical data in a hospital often encounters obstacles in its processing, one of which is in processing data manually, manual data processing takes more time and allows errors to occur so that the resulting data is less accurate and inefficient.

One of the subsystems in the national health system is management, information, and health regulation (Permenkes RI no. 72 of 2012 concerning the national health system) health information management is one of the components that has an important position in the SKN. In almost all conditions of society, the need for health services is greater than the resources available. In the early stages of implementing a health system, resource development is needed, both human and physical. The provision of health services can be categorized based on the objectives of the type of service provided.

Ultimately, the form of health service delivery in any country's health system needs to ensure primary health care for all its citizens. Preventive, promotive efforts, increasing health literacy and the ability to maintain health independently. [2]

Health services are a series of activities carried out in an integrated, integrated, and continuous manner to maintain and improve health levels carried out in the form of disease prevention, disease treatment, and health recovery.

Health service facilities in Indonesia, abbreviated as Faskes, are grouped based on their level of service, namely first-level health facilities (providing basic health services), second-level health facilities (providing specialist health services), and third-level health facilities (providing subspecialist health services). Types of health facilities in Indonesia include independent health worker practices, community health centers (puskesmas), clinics, hospitals, pharmacies, medical service facilities for legal purposes, and traditional health facilities. [3]

Hospitals (RS) are divided into general hospitals and specialty hospitals. General hospitals (RSU) are hospitals that provide health services in all fields and types of diseases, while special hospitals (RSK) are hospitals that provide central services in one field or one specific type of disease based on scientific discipline, age group, organ or type of disease, including maternal and child hospitals, heart hospitals, and cancer hospitals. In addition, hospitals are also grouped into

classes A, B, C, and D while RSKs are grouped into classes A, B, and C. A hospital is a health service agency that provides comprehensive health services that provide inpatient, outpatient, and emergency services whose services are provided by doctors, nurses, and other health experts. [4] Medical records are files containing writings and documents about patient identity, examination results, treatments that have been given, and also other actions and services provided to patients. Patients are any person who consults about their health problems to obtain the necessary health services, either directly or indirectly from a doctor or dentist or certain health workers, information on supporting examination results, daily observation and treatment records, and all records, whether in the form of radiology photos, imaging images and electrodiagnostic recordings (Ministry of Health of the Republic of Indonesia, 2013)

Medical records are very important from various aspects. From an administrative perspective, medical records support actions based on the authority and responsibility of medical personnel in achieving health care goals. From a medical perspective, medical records serve as a basis for planning patient treatment and care. Filling out medical records must be done completely by doctors and health workers to see the development of the patient's health history. Each medical record must also include the name, time, and signature of the officer providing the service or action. [5]

Based on a preliminary study conducted in May 2024 at Hospital X, it was found that there were problems in the verification and codification process.

There are several main conditions for more than one inpatient and require verification officers to determine which diagnosis is the main condition when the patient returns home.

The results of another study by Angga Ferdianto (2020) entitled Analysis of the Accuracy of Codification of Medical Records of inpatient orthopedic surgery patients based on ICD 10 at the Dr. Mohammad Zyn Hospital, Sampang Regency, states that the accuracy of codification of medical record documents for inpatient orthopedic surgery cases is 0% and the percentage of inaccuracy is 100%. The inaccuracy is due to the absence of the fifth character ICD 10 code and there is no code in the SIMRS because the coding system is still manual.[6]

Accuracy in providing diagnosis codes is an important thing that needs to be considered by medical record personnel, the quality of coded data is valuable for health information management. Accuracy of diagnosis is crucial in the field of clinical data management, billing, and other matters related to health care and services (Hatta, 2008).[7]

## RESEARCH METHODS

In this study descriptive and qualitative research methods. According to Sugiyono (2020), qualitative research methods are methods based on the philosophy of post-positivism, which is used to research natural events or phenomena. In qualitative research, researchers become key instruments.

1. Population

   According to Sugiyono (2020), the population is a generalization area consisting of phenomena or topics that have certain values and characteristics that are determined by researchers to be studied, and then conclusions are drawn. Population is not only humans but also other natural phenomena and objects. The population in this study were patients with a primary diagnosis entered in the Electronic Medical Record with more than one diagnosis in May 2024 with a total of 418 inpatients.

2. Sample

   According to Sugiyono (2020), the sample is a component of the total and characteristics possessed by the population. The sample in this study describes the percentage of the total population. In this study, researchers used the Slovin formula to select the number of samples that would be the object of research. The formula used is

$$n = \frac{N}{1 + N(e)^2}$$

Information :

n : sample

N : population

e : Error tolerance limit

Based on the formula above, the researcher obtained the number of samples needed by the researcher in this study is

$n=418/(1+418)x(0,1)^2$

n=418/419(0,01)

n=418/4,19 = 99,7

n = 100

## RESEARCH RESULT

Based on the results of interviews and observations at Hospital X, it was stated that there was more than one factor causing the main diagnosis during hospitalization at Hospital X :

1. Man

   The number of medical records staff at Hospital X is 5 people, of which 2 outpatient coders and 1 inpatient coder are assigned as coders. The qualifications for inpatient coders are :

**Table 1.** Human Resource of Coder

| Coder | | |
|---|---|---|
| Work experience | Gender | Studied |
| 5 Years | Male | D3 Medical Record |

2. Method

   Enforcement and recording must be by ICD 10, namely the enforced code must be complete and accurate. In determining the main condition code, complete information is needed so that the main condition code matches the main diagnosis written by the doctor. The determination of the main condition that sometimes occurs in the main condition and other conditions or sometimes the written diagnosis is not appropriate, for that, the coder coordinates with the patient's responsible doctor to determine the main condition that is more appropriate or appropriate. If coordination is difficult to do, the coder can use the Morbidity Rule (MB) 1 to 5.

**Table 2.** Explain rule MB 1 - 5

| NO | RULE MB | Explain |
|---|---|---|
| 1 | MB 1 | If the main condition written is minor, or presenting, while there is another diagnosis that is more significant and relevant to the action given which is written in another condition, then this condition is selected as the main condition. |
| 2 | MB 2 | If the main condition written is more than one diagnosis and one of them has a diagnosis that is relevant to the treatment given, then choose that condition as the main condition, but if there is none, choose the condition written earlier as the main condition. |

| | | |
|---|---|---|
| 3 | MB 3 | If the diagnosis written in the main condition is a symptom of a detailed diagnosis, the symptoms of which are written in the main condition, then choose the more detailed diagnosis as the main condition. If the symptoms written in the main condition do not represent the conditions written in other conditions, then choose the condition that is relevant to the action. However, if there is no condition, the symptoms can be the main condition. |
| 4 | MB 4 | If the diagnosis written in the main condition is in the form of a term or place that describes something more general, either a place or a term, but there is a more specific diagnosis in another condition than the diagnosis written in general in the main condition, then choose the specific condition to be the main condition. |
| 5 | MB 5 | The alternative rule is if the main condition written is more than one or only one but does not have any information written in the other conditions or the Action, then choose the earlier condition that was written first as the main condition. |

3. Machine

   The implementation of medical record management using electronic medical records can save a lot of space, and data management efficiency, and have an impact on faster and easier medical services, which can improve the quality of services in hospitals. The application was developed by a third party in collaboration with the hospital to meet the needs of electronic-based services.

4. Material

   In this study, the material is the number of diagnoses that have been coded for the disease, according to the specified sample, namely 100 samples of medical records that have been taken. After coding the number of medical records, several incorrect codes were found :

**Table 3.** Codification accuracy

| No | Accurate | Total | % |
|---|---|---|---|
| 1 | Accurate | 83 | 83 |
| 2 | Inaccurate | 17 | 17 |

| | | |
|---|---|---|
| Total | 100 | 100 |

**Table 4.** Inaccurate codification factors

| No | Accurate | Reason |
|---|---|---|
| 1 | Inaccurate | 1. Due to the large number of patients, doctors are less careful in inputting diagnoses into electronic medical records and coders are also less careful when rechecking incorrect diagnosis codes.<br>2. The many stages in entering a diagnosis make it difficult for doctors to input the data.<br>3. The use of the new application began in February 2024, so it is still in the process of system improvement and development, as well as adjustments by each user. |

5. Money

Electronic medical records that are still in the development stage, require adjustments in the disease code database, because it still contains 3 character categories, while in the disease classification code, there are 4 and 5-digit character codes. The data entry in the RME is not fully by the codification rules, there are still subcategory titles (3-digit character categories which are the titles of each subcategory) that can be selected by the doctor in charge of the patient. The correct rule is to determine the disease diagnosis code using a combination of letters and numbers based on the applicable disease classification, namely ICD 10 (International Statistical Classification Of Disease And Related Health Problem Tenth Revision)

## DISCUSSION

The transition from conventional medical records to electronic medical records requires all users of electronic medical records at Hospital X to adapt, get to know, and learn how to operate the electronic medical record application, which researchers see in the input of the diagnosis

column as the number of samples the researcher took. The number of primary diagnoses recorded together with other diagnoses in the same column requires verification officers to determine one primary diagnosis for the patient. The results of the percentage of accuracy of the primary conditions in inpatients in May 2024 at hospital X obtained the accuracy of the primary conditions of 83 (83%) correct medical records, and 17 (17%) incorrect medical records were found. From the data obtained, the accuracy of the primary conditions of inpatients at Hospital X has been running well but an evaluation is needed because there are still primary conditions that are not correct. The inaccuracy of providing the diagnosis code is due to the absence of the 4th character in the inpatient diagnosis code in the electronic medical record, this will have an impact on reporting and calculating patient rates when returning from treatment.

**Picture 1.** Verification flowchart in electronic medical records


Explain flowchart :

1. Before doing the coding, first log in to the electronic medical record application
2. Display the list of names of inpatients according to the specified date and month.
3. Select the name of the patient to be verified according to the specified date.
4. The site menu is a menu of options for application users to open the page they want to select

5. EPR is an electronic patient record where in this menu the coder can see all patient records, both diagnoses and other supporting results.
6. The coding menu is a menu used by coders to determine the patient's main condition or other diagnoses.
7. The coder determines the patient's primary condition according to ICD 10.
8. Final of verification

The accuracy of the main condition code is very important to support the effectiveness of codification, the patient code is considered correct if it is appropriate for all actions that occur, complete according to the classification provisions used.

Based on the results of the study on the accuracy of the main conditions of inpatients at Hospital X. The implementation of electronic medical records at Hospital X has not been able to provide a consistent effect and quality of diagnostic codification, some of the main problems are the limited number of characters in the electronic medical record so the diagnostic code is not by the codification rules, so that the implementation of electronic medical records cannot provide 100% quality.

## SUMMARY

The results of the study explain that in electronic medical records, several inaccurate diagnoses were still found due to inaccurate input in the diagnosis column in the electronic medical records by the doctor in charge of the patient, and it is hoped that further researchers, especially those interested in similar problems, are expected to study this case with a wider scope by increasing or developing more complete variables that are not yet available in this study.

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