Formosa Journal of Multidisciplinary Research (FJMR)
Vol. 3, No. 6 2024: 2031-2038

Mortality Data Management at Muhammadiyah University Hospital Malang

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A R T I C L E I N F O

Keyword: Mortality, Recording, Coding, Reporting, Medical Record

Received : 19, April
Revised : 18, May
Accepted: 20, June

A B S T R A C T

Background: Mortality data is an important indicator of hospital performance, used for assessment and policy-making. This study evaluates the processing of mortality data at RSU Universitas Muhammadiyah Malang, including recording, coding, and reporting. Methods: A qualitative study with interviews of coding staff and observation of medical records. Results: The recording of death data is suboptimal due to an inappropriate death certificate format. Coding and reselection of UCOD are not optimal because they are not based on the diagnosis in the death certificate, and the UCOD reselection and MMDS rules have not been used. Reporting is done by calculating GDR and NDR, and documenting the diagnoses of deceased patients and KLB reports. Conclusion: Suboptimal management of death data affects data accuracy. SOP creation, redesign of death certificate forms, and training for relevant staff are needed.

DOI: https://doi.org/10.55927/fjmr.v3i6.9465
ISSN-E: 2829-8896
https://journal.formosapublisher.org/index.php/fjmr

INTRODUCTION

Hospitals are a crucial aspect of the healthcare system in terms of service delivery. One important indicator of hospital performance is patient mortality rates, making it essential for hospitals to manage mortality data effectively (Tri Utami et al., 2023). The medical records unit is responsible for the management of death data, which includes recording, coding the underlying cause of death, and reporting.

The underlying cause of death (UCOD) is recorded by the attending physician on the death certificate, which is used to estimate mortality rates or the risk of death from specific diseases (Rusdi et al., 2022). The diagnosis of the underlying cause of death on the death certificate is written in sequence according to international formats as described in ICD-10 Volume 2 (Rosa Patricia et al., 2023). However, research by (Simanjuntak & Ginting, 2019) found that the completion rate of death certificates is still low, with only 40.5% for the identification section and 28.9% for the review of important reports. This affects the accuracy of data recording, coding, and reporting.

The assignment of codes for the underlying cause of death is carried out by coding staff using the Medical Mortality Data Sheet and ICD-10. According to research by (Munawaroh et al., 2023) the use of MMDS and the presence of SOPs significantly affect the accuracy of the underlying cause of death codes. Consequently, the accuracy rate achieved was only 21.4% out of 56 files examined. Therefore, it is crucial to accurately and correctly determine the underlying cause of death codes to prevent errors in death data reports and in the planning of prevention and mitigation actions.

This background led to the creation of the article titled "Mortality Data Management at Muhammadiyah University Hospital Malang". The purpose of this article is to analyze the process of managing death data, from recording to handling and reporting the causes of death. It is hoped that this article can provide valuable insights for Muhammadiyah University Hospital Malang regarding the implementation of accurate coding for the underlying cause of death.

LITERATURE REVIEW

Medical Record

Medical records are documents that contain patient identification data, examinations, treatments, actions, and other services provided to the patient (Peraturan Menteri Kesehatan Nomor 24 Tahun 2022 Tentang Rekam Medis, 2022). Medical records include both medical and non-medical data related to the services received by the patient. Proper medical record-keeping impacts the quality of the medical records produced (P. Nabila et al., 2022).

Mortality Data Management

Mortality data comprises patient death information, including patient identity, attending physician, and cause of death diagnosis. The processing of mortality data involves recording, coding, and reporting. The initial recording of death data is done by creating a death certificate. The death certificate is written by the attending physician, and the information comes from the healthcare practitioners handling the patient (Rahmawati & Lestari, 2019).

The coding of mortality data is based on the diagnosis stated on the death certificate, then coded using ICD-10 and reselected using reselection rules and referring to the MMDS table (Rahmawati & Lestari, 2019). The final activity in data management is the reporting of data, which is conducted both internally and externally to report the occurrence of death cases.

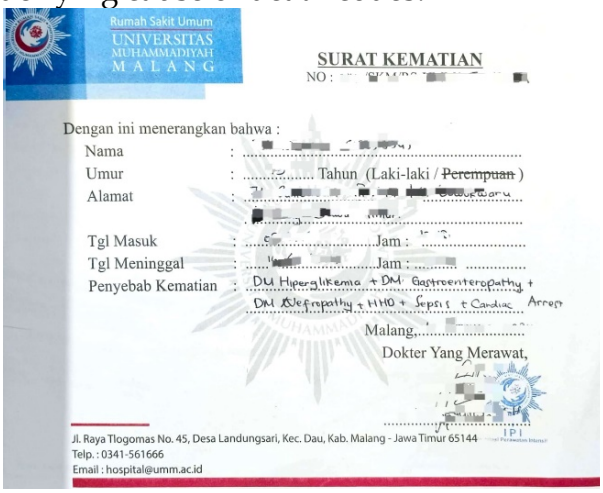
METHODOLOGY

This research was conducted using a descriptive qualitative method, involving interviews with coding staff from the medical records unit at Muhammadiyah University Hospital Malang and observations of deceased patient files from 2024. Data were obtained through interviews with the coding staff at Muhammadiyah University Hospital Malang, focusing on gathering information about the overall implementation process, potential challenges, and the use of underlying cause of death codes. Observations were also carried out, focusing on the implementation process, the results of death certificate recordings, and identifying challenges encountered during the process.

RESEARCH RESULT

Procedure for Recording the Underlying Cause of Death Diagnosis on Death Certificates

The recording of the diagnosis on death certificates at RSU UMM is carried out by the attending physician. The documents are then sent to the medical records department for processing, which includes coding and reporting. The recording of death certificates at RSU UMM shows that all diagnoses are written by the attending physician in a single sequence. However, there are still differences in the writing style between different physicians. This is due to several factors, such as the existence of SOPs and the format of the death certificate, which affect the ease of the coding process and the accuracy of the underlying cause of death codes.


Rumah Sakit Umum
UNIVERSITAS MUHAMMADIYAH MALANG

SURAT KEMATIAN
NO : [redacted]

Dengan ini menerangkan bahwa :
Nama : [redacted]
Umur : [redacted] Tahun (Laki-laki / ~~Perempuan~~)
Alamat : [redacted]
Tgl Masuk : [redacted] Jam : [redacted]
Tgl Meninggal : [redacted] Jam : [redacted]
Penyebab Kematian : DM Hiperglikemia + DM Gastroenteropathy + DM Nefropathy + HHD + Sepsis + Cardiac Arrest

Malang, [redacted]
Dokter Yang Merawat,

[redacted]

Jl. Raya Tlogomas No. 45, Desa Landungsari, Kec. Dau, Kab. Malang - Jawa Timur 65144
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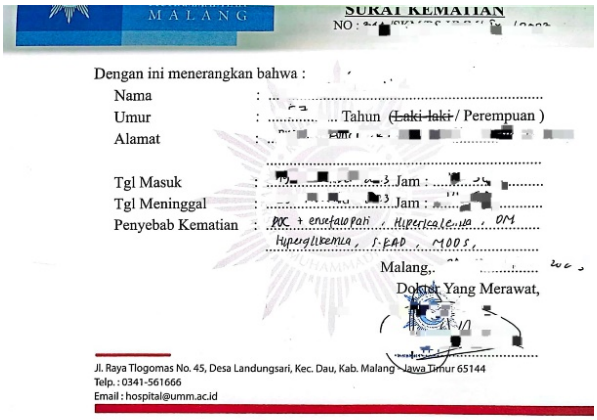
Figure 1. Death Certificate 1

On the death certificate, the diagnosis reads "DM Hyperglycemia + DM Gastroenteropathy + DM Nephropathy + HHD + Sepsis + Cardiac Arrest." The diagnoses are separated using the "+" sign.


MALANG

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NO : [redacted]

Dengan ini menerangkan bahwa :

Nama : [redacted]

Umur : [redacted] Tahun (~~Laki-laki~~ / Perempuan)

Alamat : [redacted]

Tgl Masuk : [redacted] Jam : [redacted]

Tgl Meninggal : [redacted] Jam : [redacted]

Penyebab Kematian : DOC + ensefalopati , Hiperkalemia , DM Hyperglikemia , S.KAD , MODS ,

Malang, [redacted]

Dokter Yang Merawat,

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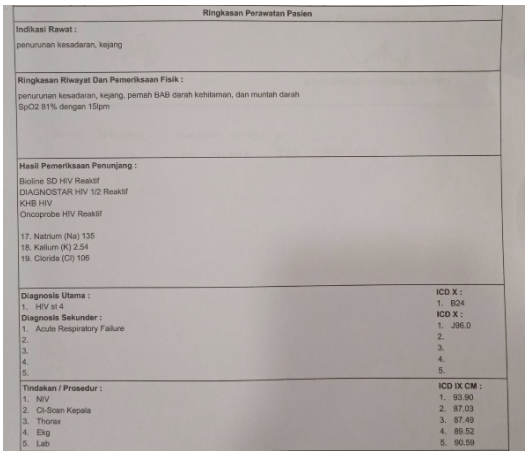
Figure 2. Death Certificate 2

On another death certificate, the diagnosis reads "DOC + Encephalopathy, Hyperkalemia, DM Hyperglycemia, S.KAD, MODS." The diagnoses are separated using both the "+" sign and commas. The reason for the difference in the use of "+" and "," to separate the diagnoses is not yet known.

Procedure for Coding the Underlying Cause of Death Diagnosis

The coding provided is based on the diagnoses listed in the medical records summary; diagnoses on the death certificate are used solely for the patient's family administration process. According to the interview findings, the staff stated, "*So far, for coding the underlying cause of death, we just select from the patient's medical summary. Because if we want to use those rules, we're still confused, not fully understanding them.*". In practice, coding staff typically use the codes from the patient's medical summary as the underlying cause of death. However, discrepancies were found between the diagnoses in the medical summary and the primary cause of death diagnosis determined from the death certificate.


Ringkasan Perawatan Pasien

Indikasi Rawat :
penurunan kesadaran, kejang

Ringkasan Riwayat Dan Pemeriksaan Fisik :
penurunan kesadaran, kejang, pernah BAB darah kehitaman, dan muntah darah
SpO2 81% dengan 15lpm

Hasil Pemeriksaan Penunjang :
Bioline SD HIV Reaktif
DIAGNOSTAR HIV 1/2 Reaktif
KHB HIV
Oncoprobe HIV Reaktif

17. Natrium (Na) 135
18. Kalium (K) 2.54
19. Clorida (Cl) 106

Diagnosis Utama :
1. HIV st 4

Diagnosis Sekunder :
1. Acute Respiratory Failure
2.
3.
4.
5.

ICD X :
1. B24

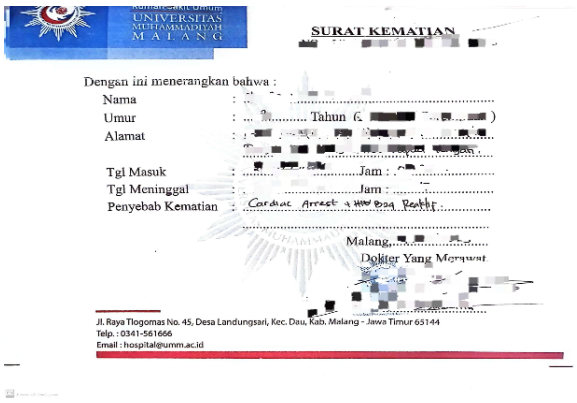
ICD X :
1. J96.0
2.
3.
4.
5.

Tindakan / Prosedur :
1. NIV
2. Ct-Scan Kepala
3. Thorax
4. Ekg
5. Lab

ICD IX CM :
1. 93.90
2. 87.03
3. 87.49
4. 89.52
5. 90.59

Figure 3. Medical Resume

The medical summary mentions HIV as the primary diagnosis and respiratory failure as the secondary diagnosis.


UNIVERSITAS MUHAMMADIYAH MALANG

SURAT KEMATIAN

Dengan ini menerangkan bahwa :
Nama :
Umur : Tahun (
Alamat :
Tgl Masuk : Jam :
Tgl Meninggal : Jam :
Penyebab Kematian : Cardiac Arrest

Malang,
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Figure 4. Death Certificate 3

On the death certificate, cardiac arrest and HIV are listed, and after reselection using rule 2 and the MMDS table, cardiac arrest is identified as the underlying cause of death. These differences will affect the determination, reporting, or use of the underlying cause of death code in the claims process.

Procedure for Reporting the Underlying Cause of Death Diagnosis

The process of reporting death data is divided into internal and external hospital reports. Internal reports include GDR and NDR values for each month, as well as a list of medical record numbers and the primary diagnoses of deceased patients. External reports are submitted to SIRS online RL 4A and cases of extraordinary events such as outbreaks or natural disasters. According to the coding staff, "*There's no specific reporting for it, only cases from outbreaks are reported, like COVID last time. And for the SIRS online, we input death data for each diagnostic group. Besides, maybe just recorded in Excel. Only medical record numbers and primary diagnoses are recorded.*"

So far, the external reporting process for death data is only specified for deaths due to extraordinary events (outbreaks) such as COVID-19 or natural disasters. Additionally, in the reporting and claims process, only diagnoses from the medical summary are used. Death certificates are only used for administrative requirements in obtaining patient death certificates.

DISCUSSION

Procedure for Recording the Underlying Cause of Death Diagnosis on Death Certificates

In the process of recording the underlying cause of death diagnosis on death certificates, several differences in writing styles were found. Different recording methods certainly affect the interpretation of the sequence of diagnoses noted by the staff. This recording process may also differ because the existing death certificate format does not yet comply with the standards outlined in ICD-10, especially regarding content aspects.

In this aspect, ICD-10 Volume 2 explains that death certificates include the diagnosis of the cause of death, both direct, intermediate, and underlying causes, as well as the interval between the onset of the disease and death. The standardized death certificate in ICD-10 Volume 2 also consists of 2 parts, with Part I containing diagnoses directly related to death, with 4 points from a, b, c,

and d. Part II contains other conditions that contribute to death but are not related to the conditions in Part I.

These differing formats limit the writing to only using one sequence, which affects the final determination of the underlying cause of death. This aspect becomes a deficiency in the death certificate form at UMM Hospital, negatively impacting access to health policy information, strategies for prevention, and death recording. This information hindrance leads to less accurate monitoring and evaluation of health programs to be implemented. (Setiawan Hendyca Putra et al., 2021).

According to the issues outlined, the presence of SOPs and education is crucial in this matter. The implementation of SOPs ensures structured, systematic, timely, and accountable activities. (D. R. Nabila, 2022). Additionally, the death certificate format can be improved to allow for more than one sequence in recording. Poorly designed forms can lead to various detrimental outcomes such as inadequate data collection, ineffective documentation, minimal accuracy, and susceptibility to duplication. (Surya Putri et al., 2018). With the current recording practices, errors in selecting the underlying cause of death are possible.

Procedure for Coding the Underlying Cause of Death Diagnosis

The coding process involves writing diagnoses on the medical summary as the underlying cause of death without any reselection. However, there are differences in recording between the summary and death certificate, which undoubtedly affect the coding outcome. Furthermore, variations in how diagnoses are recorded on death certificates will also influence the perceptions of staff and the choice of underlying cause of death codes.

Accurate coding plays a crucial role in health statistics, particularly the accuracy of UCOD, which affects mortality statistics (Rusdi et al., 2022). However, the current recording practices only allow for the use of one rule, namely rule 2, with the following examples:

1. Diagnosis = Cardiac Arrest + HIV Reactive

Rule applied: rule 2, as there is only one sequence, thus the first mentioned diagnosis is selected as the UCOD, i.e., Cardiac Arrest (I46.9). After checking with MMDS, no need to apply rule 3 or other modification rules.

2. Diagnosis = DM Hyperglycemia + DM Gastroenteropathy + DM Nephropathy + HHD + Sepsis + Cardiac Arrest

Rule applied: rule 2, as there is only one sequence. The first mentioned diagnosis is selected, which is insulin-dependent diabetes mellitus with multiple complications (E10.7). The diabetes mellitus code is determined as insulin-dependent after reviewing the patient's records. Multiple complications are chosen because in this case, the patient has diabetes with complications of hyperglycemia, gastroenteropathy, and nephropathy.

Procedure for Reporting the Underlying Cause of Death Diagnosis

The process of reporting death data at RSU UMM is divided into internal and external reporting. Internal reports include the calculation of NDR and GDR as monthly report data. External reports are inputted into SIRS online RL 4A, and other reports are only designated for death data due to extraordinary events (outbreaks) such as COVID-19 or natural disasters. Additionally, in the reporting

and claims process, only diagnoses from the medical summary are used. Death certificates are only used for administrative requirements in obtaining patient death certificates.

The creation of death data reports can be utilized by hospitals as the basis for evaluating the quality of hospital services, decision-making, and policy-making in reducing mortality rates and for documentation processes (Nurhayati et al., 2022). The effective utilization of report data is expected to improve the quality of hospital services, thereby reducing mortality rates.

CONCLUSSION AND RECOMMENDATION

The process of handling death data, which includes recording, coding, and reporting, is interconnected. The accuracy of death data refers to the accuracy of the initial recording process of the death event, which includes patient identification to the sequence of the underlying cause of death. The content of the initial recording will affect the coding results and the UCOD selected. The accuracy of coding and UCOD determination will affect the reporting data to be generated.

The activity of recording death data at RSU UMM is still not optimal due to the death certificate format not being in accordance with the international format established by WHO in ICD-10 Volume 2. It would be best to redesign the death certificate to align with the international format. Additionally, SOPs need to be established, and socialization or training should be conducted to ensure uniformity in recorded death data.

The activity of coding death diagnoses is also not appropriate because it has not been carried out based on the established rules and the assistance of MMDS. The selected underlying cause of death is also not based on the death certificate but rather on the medical summary, where differences are found. It would be best if the medical records unit could create SOPs and provide training to relevant personnel regarding the UCOD determination process and the determination of underlying cause of death coding.

The process of reporting death data is running smoothly, with the calculation of GDR and NDR values and the documentation of patient cause of death diagnoses. It would be even better if this data could be processed as statistical data on the number of diagnoses causing death, thus maximizing its utilization to improve hospital service quality.

ADVANCED RESEARCH

The limitation of this study is its broad scope, which is related to the overall process of mortality data management. It would be beneficial if future researchers could focus more on one aspect of its management, thus providing more detailed research results.

ACKNOWLEDGEMENT

Special thanks to the academic supervisor and field supervisor for providing valuable advice and input, leading to the creation of this research article with satisfactory results.

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