Procedia of Engineering and Life Science Vol. 6 2024
The 3rd International Scientific Meeting on Health Information Management (3rd ISMoHIM)
Asosiasi Perguruan Tinggi Rekam Medis dan Manajemen Informasi Kesehatan Indonesia - Universitas Muhammadiyah Sidoarjo

Review of the Implementation of Electronic Medical Records at RSU Banyumanik 2 Semarang in 2024

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Abstract—PMK No. 24 of 2022 requires all health services to implement electronic medical records no later than the end of 2023. RSU Banyumanik 2 Semarang has been using an electronic medical record system since 2022 with SIMRS called SIM KHANZA. The aim of this research is to describe the implementation of electronic medical records at RSU Banyumanik 2 Semarang in 2024. This research is qualitative research with a case study approach. Data were collected by interviewing the head of the medical records installation, and a questionnaire to measure knowledge of 7 medical records officers and 41 nurses. Interview data analysis was carried out using the content analysis method. Characteristic data analysis is presented in the frequency distribution table. The results show that the majority or 87.5% of respondents have good knowledge about the implementation of Electronic Medical Records. The Hospital has provided an operational budget for Electronic Medical Records. SIMRS RSU Banyumanik 2 Semarang is called SIM KHANZA where all medical record sheets are generally integrated, except for Informed Consent because it relates to clarity of authentication for both doctor and patient. Infrastructure is available in all service units that use Electronic Medical Records. Suggestions, hospitals should regularly monitor facilities and infrastructure every week, upgrade computer specifications with larger data storage capacity so that service is fast and uninterrupted.
Keywords— Implementation, Electronic Medical Records

I. BACKGROUND

A medical record is a file containing documents and notes containing treatment, actions, patient identity, examinations, and other services that have been provided to the patient. Medical records must be made complete by the service provider either manually or electronically. (1)

Information and Communication Technology (ICT) has now been applied in various fields, including the health sector. One application is electronic medical records or computerized medical records. (2)

The legal basis for electronic medical records is in terms of statutory regulations governing medical records. Minister of Health Regulation (PMK) Number 269 of 2008 concerning Medical Records. In 2022, the Ministry of Health will issue new regulations that adapt to science, technology, service needs, policies and laws in society.

Minister of Health Regulation (PMK) Number 24 of 2022 concerning Medical Records. From this policy, health service facilities (Fasyankes) are required to run an electronic patient medical record recording system (3). According to PERMENKES No. 24 of 2022, states that "Electronic medical records are medical records created using an electronic system intended for administering medical records". (4)

Electronic Medical Records (RME) is the use of information and communication technology to collect, store, process and access data stored in hospital patient records in a database management system that integrates various sources of medical information. (5)

RSU Banyumanik 2 Semarang is a hospital in Indonesia that previously implemented a manual medical record system and is currently starting to use an electronic medical record system. RSU Banyumanik 2 Semarang is located at Jalan Perintis Independen No.57, Banyumanik, Kec. Banyumanik, Semarang City. RSU Banyumanik 2 Semarang is a type C hospital. RSU Banyumanik 2 Semarang has implemented an electronic medical record system since 2022 with an application called SIM KHANZA. There are several obstacles to the implementation of electronic medical records, such as the lack of information technology experts who understand the implementation of RME (6–8), computer network disruptions (9), the information technology budget which tends to be limited (10), and the absence of policies related to electronic medical record systems (6,7). Therefore, it is necessary to conduct a study on the Implementation of Electronic Medical Records at RSU Banyumanik 2 Semarang.

II. METHOD

This case study was conducted from March to May 2024. This research measures the characteristics of RME users at RSU Banyumanik 2 Semarang, especially medical record officers and nurses (age, education, knowledge, years of service), as well as measuring the budget. , SIMRS, infrastructure, policies and standards/procedures for implementing RME. The target is medical record officers health workers and nurses as direct users of Electronic Medical Records at RSU Banyumanik 2 Semarang. Determination of the sample used the Slovin formula with an error rate of 1% with a sample size of 48 respondents. Then a proportional random sampling technique was carried out which obtained a sample of 7 medical record officers and 41 nurses. Questionnaire with 12 questions to determine characteristics and measure knowledge using categories (Good: Correct Answer ≥ 70%, Fairly Good: Correct Answer 50 - 60%, Bad: Correct Answer ≤ 40%) (11). To find out budget variables, SIMRS, infrastructure, policies, and standards/procedures for implementing RME, a semi-structured interview was conducted with the subject of the head of the medical records installation.

Analysis of interview data or qualitative data will be carried out using content analysis. Knowledge will be presented with distribution table analysis, frequency is used to determine the distribution of characteristics of RME users (nurses and medical records officers).

III. RESULTS AND DISCUSSION

The research was conducted from early March 2024 to May 2024. With 48 respondents in this study. Based on interviews and questionnaires conducted at RSU Banyumanik 2 Semarang, results were obtained that were in accordance with the research objectives as follows

Human Aspect

Table 1. Respondent Characteristics

Variable	Frequency (f)	Percentage %
Age		
17 – 25 Years	14	29,2
26 – 35 Years	21	43,8
36 – 45 Years	10	20,8
46 – 55 Years	3	6,2
Education		
Diploma	26	54,2
S1	22	45,8
Knowledge		
Good : Correct Answer ≥ 70%	42	87,5
Fair: Correct Answer 50-60%	5	10,4
Less: Correct Answer ≤ 40%	1	2,1
Length of work		
≤3 Years	32	66,7
≥3 Years	16	33,3

Based on table 1 above, it shows that the majority of respondents were aged 26 - 35 years, namely 43.2%, so the characteristics of respondents based on age at RSU Banyumanik 2 Semarang were still of productive age, young officers were considered more productive. . The most recent education level of most respondents was a diploma, namely 54.1%. Medical records officers and health care workers have a Diploma three education according to their field. In the Regulation of the Minister of Health of the Republic of Indonesia Number 24 of 2022 Chapter 1 General Provisions Article 1 Paragraph 3 it is stated that a Health Personnel is every person who dedicates himself to the health sector and has knowledge and/or skills through education in the health sector. health sector which for certain types requires authority to carry out health efforts. And paragraph 4 states that a Medical Registrar and Health Information Registrar is someone who has passed Medical Records and Health Information education in accordance with statutory provisions. The health workers who work at RSU Banyumanik 2 Semarang are dominated by DIII graduate officers who have an educational background appropriate to their field and have a high level of productivity in their work (12). Based on the results of the knowledge questionnaire about electronic medical records, it is known that all medical record officer respondents have good knowledge about electronic medical records. However, among nurses there are still 2.1% who lack knowledge about electronic medical records. So most of the respondents'

knowledge regarding electronic medical records is good. Based on length of service, most respondents have worked at RSU Banyumanik 2 Semarang for less than 3 years. Where the length of work can affect the officer's performance, the length of time a person works will provide different experiences in that field of work. (13)

Money Aspect

Based on the results of interviews with the head of medical records at the Medical Records Installation at RSU Banyumanik 2 Semarang on budgeting for the implementation of electronic medical records

"Yes, there is funding support for the implementation of electronic medical records which is sourced from the RAB of the Hospital every year so that the budgeting implementation runs smoothly without any problems and the budgeting is used for operational electronic medical records"

Based on this statement, the Hospital has made a budget plan for the implementation of electronic medical records which is based on the annual hospital budget plan which is used for electronic medical record operations.

According to Rusdarti, 2008 money is an element that can never be ignored. This relates to the budget used for operational maintenance of electronic medical records. Money is very important for hospitals because the funds can be used to improve existing facilities in the hospital in order to improve the quality of service to patients. (29)

Material Aspect

Based on the results of interviews with the head of medical records at the Medical Records Installation at RSU Banyumanik 2 Semarang on the electronic medical records implementation system

"The system used by SIM KHANZA, trial and error, started in January 2023 in stages, the hospital collaborated with vendors in making SIMRS. Currently, KHANZA's SIM has not yet integrated all the medical record sheets, there are still some, especially those related to patient and family signatures. Obstacles occurred at the beginning of the RME implementation because they were still adjusting to new things. "KHANZA's SIM doesn't often cause errors. If an error occurs, the medical records officer coordinates with the IT team and returns to the manual as a result, the service will be disrupted."

According to Rusdarti, 2008, to achieve good service, apart from people who are experts in their field, they must also be able to use materials as part of the infrastructure. Humans without materials and equipment will not achieve the expected goals.

Based on the research results, RSU Banyumanik 2 Semarang uses an application called SIM KHANZA which started in January 2023. The hospital collaborated with vendors in creating the SIM KHANZA system. In SIM KHANZA not all medical record sheets have been integrated, especially on medical record sheets related to signatures. patient or family. The KHANZA SIM system periodically experiences downtime when there is maintenance so that service is disrupted. The medical records officer will coordinate with the IT team if a system error occurs and return to the manual (paper) system so that services continue to run.

Aspect Engine

Based on the results of interviews with paramedics and the results of questionnaires among users, the following are the types of infrastructure used in implementing Electronic Medical Records

Table 2. Infrastructure Used

Infrastructure	User
Computer	Head of medical records installation
	TPPRI/TPPGD officers
	TPPRJ officer
	Assembling Officer
	Coding & Indexing Officer
	Analysis & Reporting Officer
	Filing Officer
	Inpatient Nurse
	Outpatient nurse
Computer network	Head of medical records installation
	TPPRI/TPPGD officers

	TPPRJ officer
	Assembling Officer
	Coding & Indexing Officer
	Analysis & Reporting Officer
	Filing Officer
	Inpatient Nurse
	Outpatient nurse
Printers	Head of medical records installation
	TPPRI/TPPGD officers
	TPPRJ officer
	Inpatient Nurse
	Outpatient nurse
Servers	Head of medical records installation
	Inpatient Nurse
	Outpatient nurse
Fingerprints	TPPRI/TPPGD officers
	TPPRJ officer
Scanners	TPPRI/TPPGD officers
	TPPRJ officer
	Assembling Officer
	Filing Officer
	Inpatient Nurse
	Outpatient nurse
UPS	TPPRI/TPPGD officers
	TPPRJ officer
	Coding & Indexing Officer
	Analysis & Reporting Officer
	Inpatient Nurse
	Outpatient nurse
Modem	TPPRI/TPPGD officers
	TPPRJ officer
	Coding & Indexing Officer
	Analysis & Reporting Officer
	Inpatient Nurse
	Outpatient nurse
Laptop	TPPRI/TPPGD officers
Speaker	TPPRJ officer
	Outpatient Nurse
Queue TV	TPPRJ officer
Telephone	TPPRI/TPPGD officers
	TPPRJ officer
	Coding & Indexing Officer
	Analysis & Reporting Officer
	Inpatient Nurse
	Outpatient nurse

Based on the research results, the infrastructure at RSU Banyumanik 2 Semarang for implementing electronic medical records is already available. In the regulation of the Minister of Health of the Republic of Indonesia number 24 of 2022 paragraph 7 concerning electronic medical record storage, article 20 paragraph (3) states that digital-based storage media as

referred to in paragraph (1) are in the form of servers, cloud computing systems that are certified in accordance with statutory provisions. ; and/or, digital-based storage media. In general, the infrastructure provided by the hospital is adequate, in accordance with the regulation of the Minister of Health of the Republic of Indonesia number 24 of 2022.

Aspect Method

The availability of standard regulations is very necessary, having SOPs will make it easier for human resources (HR) to carry them out. Apart from that, the existence of SOPs makes it easier for new officers to work because there are clear regulatory standards (Hibbard et al., 2005). The purpose of standard operating procedures (SOP) is to ensure that all officers carry them out in the same way, which is necessary to achieve the desired process results (Banda, 2015). (14)

Based on the results of interviews with the head of medical records to support the execution of electronic medical records at RSU Banyumanik 2 Semarang, the hospital has following policies and procedures :

"Yes, there are guidelines and policies for implementing RME PMK No. 24 of 2022 and a Hospital Director's Decree. SOP for electronic medical records includes SOP for electronic medical record data security and SOP for access rights to medical record data and information. The policy on access rights to medical record data and information aims to guarantee the guarantee of patient medical record data, protect medical records from the risk of loss, damage, falsification or layering by unauthorized persons/entities."

Based on the research results, the policies and procedures for implementing electronic medical records, the guidelines used are PMK No. 24 of 2022 and the Decree of the Director of the Banyumanik 2 General Hospital, Semarang concerning Electronic Medical Record Guidelines No. 333/KEP/RSB2/II/2021. There is an SOP for security of electronic medical record data with No. Document 006/SPO/RM/RSUB2/II/2021 and SOP Right to access medical record data and information with No. Document 004/SPO/RM/RSUB2/II/2021, thus guaranteeing the confidentiality of patient medical record data and can protect medical records from the risk of loss, damage, falsification or use by unauthorized persons/entities. In general, with clear policies and procedures, hospitals are ready to implement Electronic Medical Records.

IV. CONCLUSIONS AND SUGGESTIONS

Based on the overall research results, the majority of medical record officers and nurses had good knowledge about electronic medical records, namely 42 people or 87.5%. Hospitals already have a budget to maintain electronic medical records. In SIMRS, called SIM KHANZA, all medical record sheets are generally integrated, except for Informed Consent because it relates to clarity of authentication for both doctors and patients. Infrastructure is available in all service units that use Electronic Medical Records. Hospitals have policies and procedures for implementing electronic medical records. There are still several obstacles that often occur in implementing RME, including limited computer data storage capacity so that computers become slow, unstable computer networks, SIMRS errors such as data not being saved. The suggestion from the hospital is to improve SIMRS so that all forms of medical records can be computerized and integrated with the ERM system. Hospitals are increasing their computer specifications with greater data storage capacity so that service is fast and uninterrupted.

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