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Analysis of Factors Hindering the Implementation of Electronic Medical Records at Pertamina Rantau Hospital

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ABSTRACT

The Indonesian government recognizes that with the rapid advancement of technology, conventional medical records are no longer relevant in today's conditions. Digitalizing healthcare services is essential, which means that patient medical records must be stored electronically. Based on interviews and observations conducted by researchers, it was found that the use of electronic medical records at Pertamina Rantau Hospital has not been fully optimized. Therefore, the purpose of this research is to identify the factors that hinder the implementation of electronic medical records at Pertamina Rantau Hospital. This study is qualitative, using observation and interview methods. It is undeniable that there will be many obstacles or problems encountered when implementing electronic medical records. One of the most influential factors is the four elements of medical record management: man, material, machine, and method. To achieve digital transformation of the healthcare system in Indonesia, adequate facilities are needed. Hospital policies are also one of the biggest keys to the implementation of electronic medical records. Therefore, hospitals are expected to establish firm policies regarding the implementation of electronic medical records at Pertamina Rantau Hospital

INTRODUCTION

Technological advancements in the field of information have driven changes in societal structures. One of the most important components in a hospital organization is the information technology system. Information systems can be utilized for data and information services to make them more productive, fast, easy, accurate, orderly, safe, and efficient. This is particularly important in facilitating and streamlining the policy-making process to enhance the healthcare service system (Ana Fitriani, Fita Rusdian Ikawati, 2022).

According to Law Number 44 of 2009 the institution responsible for providing healthcare services is the hospital. A hospital is a healthcare service institution that provides comprehensive medical care to individuals, offering outpatient, inpatient, and emergency services (Wardhina & Rahmadiliyani, 2022).

Hospitals are required to implement electronic medical records activities in accordance with Ministry of Health Regulation Number 24 of 2022 on electronic medical records. This regulation defines electronic medical records as documents containing patient identification data, examinations, treatments, procedures, and other services provided to patients, including outpatient, inpatient, and emergency services, conducted by both government and private entities.

Electronic Medical Records (EMR) refer to the use of information technology devices to collect, store, process, and access patient medical record data in hospitals, utilized in a database management system that integrates various medical data sources. In 2008, the National Alliance for Health Information Technology proposed a standard definition for electronic medical records: an electronic record containing information related to an individual's health, created, collected, managed, used, and referenced by authorized doctors or healthcare professionals within healthcare service organizations (Wardani et al., 2022).

One of the important aspects of the services provided to patients in hospitals and health centers is medical records, which include all information

related to the patient and are used as a basis for determining further actions or services. To improve healthcare services in hospitals, medical records are created with the aim of supporting orderly administration. Without a good and effective medical record management system, orderly administration in hospitals will not be achieved as expected (*DepKes RI, 2006*).

The advantages of electronic medical records (EMRs) will bring many benefits to more efficient and effective medical record management. Although developing electronic medical records requires a significant investment, it will yield benefits in the long run. One of the advantages of using electronic medical records is better service, lower costs, and competitive advantages in the future (Khasanah, 2020)

According to Ministry of Health Regulation Number 24 of 2022 regarding Electronic Medical Records, all healthcare facilities in Indonesia are required to use electronic medical records. The concept of electronic medical records began to gain attention in 2005 when the government, through the Ministry of Health in collaboration with the Ministry of Communication and Informatics, launched an integrated healthcare service program (e-Health Indonesia) at the beginning of 2005.

This program aimed to achieve equitable healthcare services across all regions of Indonesia, especially those that have been difficult to reach, through quality healthcare services and technological support in healthcare facilities (Rumondang et al., 2023)

Due to the absence of official legislation explaining electronic medical records, they were rarely heard of in Indonesia. However, in July 2022, the Indonesian government officially issued new regulations mandating the use of electronic medical records in all healthcare facilities. This new regulation, Ministry of Health Regulation Number 24 of 2022 on Electronic Medical Records, was issued to replace the old medical record regulation, Permenkes Number 269 of 2008.

The Indonesian government realizes that in this era of rapid technological development, the use

of conventional medical records is no longer economically relevant. The use of computer or electronic-based information technology to manage health data, known as electronic medical records, has become crucial.

This is considered a new approach in healthcare services that can address various technological challenges, such as reducing costs, increasing accessibility, and improving service quality. Therefore, the digitalization of healthcare services has become a necessity, with patient medical records needing to be available in electronic form (Nofita et al., 2023).

This research aligns with a study conducted by Tomy Syahputra, which shows that some doctors still resist using electronic medical records and have difficulty conducting anamnesis interviews while typing (Tomy, 2018)

Based on observations and interviews conducted by researchers in March 2024 at Pertamina Rantau Hospital, the medical records used are hybrid, meaning both electronic medical records and manual paper records are used. It was found that many of the paper records were already damaged and worn out.

From the above findings, the researcher is interested in analyzing the factors that hinder the implementation of electronic medical records at Pertamina Rantau Hospital in 2024.

METHODS

The type of research conducted is qualitative research that uses triangulation techniques. Triangulation is a collection technique based on the premise that the phenomenon under study can be better interpreted and understood so that higher truth can be obtained if viewed from various points of view. This triangulation technique is also a multi-method approach with the concept of observation-observation-interview used by researchers when collecting and analyzing data (Alfanyur & Mariyani, 2020).

Interviews will be conducted with outpatient registration officers and IT officers aimed at obtaining data on inhibiting factors for electronic

medical records from the medical record management element. Meanwhile, observations were made to directly observe the inhibiting factors of electronic medical records. The purpose of using triangulation techniques with qualitative research methods is to collect clear information about the inhibiting factors of electronic medical record implementation from the management elements in medical records, namely (Man, Material, Machine, Method).

This research is located at Pertamina Rantau Hospital, Aceh Tamiang Regency, which was conducted from March to May 2024.

The informants in this study were hospital service implementers acting as medical record officers, including one medical record staff member and one IT staff member at Pertamina Rantau Hospital:

1. Pm, who studied medical records and health information and works as a staff member in the medical records department.
2. Bs, who studied Informatics Engineering and works as a staff member in the IT department.

Data processing and analysis techniques used in this research included transcribing interview results, data reduction, analysis, and data interpretation. The final conclusions of the research were drawn from the results of this data analysis.

RESULTS AND DISCUSSION

Man

In the "Man" element, researchers found that the use of electronic medical records (EMRs) heavily depends on the knowledge and skills of healthcare workers. Health professionals who understand medical records and information technology play a crucial role in implementing health digitalization.

Based on research conducted at Pertamina Rantau Hospital, it was found that the medical records unit has only five staff members. Additionally, three of them are not graduates in medical records and health information, leaving only two qualified personnel in this field. Thus, in the medical records unit at Pertamina Rantau Hospital, there are only two individuals with a D3 diploma in

Medical Records. This number is very limited and inadequate to support the effective implementation of Electronic Medical Records (EMRs). Implementing EMRs requires sufficient human resources to handle various tasks, including data entry, system maintenance, and user training and support.

One staff member in the medical records department at Pertamina Rantau Hospital, referred to as Pm, expressed that skilled and trained medical and administrative staff are needed for the effective use of electronic medical records. Here is an excerpt from the interview with Pm:

"The shortage of RMIK staff with knowledge and skills in information technology results in a high workload. In my opinion, the medical records unit needs to add more staff who are actual graduates in medical records. A good understanding of the electronic medical records system must also be provided to RMIK graduates so they can operate and utilize electronic medical records effectively." - Pm

From the implementation of medical record duties, it was found that the hospital's medical records unit should be managed by personnel with an educational background in medical records. This is because medical records contain very important and confidential information, including patient personal data, medical history, financial information, and legal aspects.

This research aligns with a study conducted by Tomy Syahputra, which indicates that some doctors still resist using electronic medical records and face difficulties when conducting anamnesis interviews while typing. The majority of electronic medical record users lack sufficient technological understanding. Competent and available human resources are crucial factors that must be prioritized. The study shows that although nearly half of the users of electronic medical records hold a bachelor's degree or higher, they still lack the necessary technological knowledge to manage data and infrastructure independently.

The implementation of Electronic Medical Records (EMRs) at Pertamina Rantau Hospital faces various challenges, particularly related to the

limitations in the number and competence of human resources (HR). Researchers have observed several key impacts of these limitations on the EMR implementation process. One of the most evident impacts is the delay in implementing EMRs. The adoption of a new system requires several complex stages, including planning, training, and monitoring execution. However, with a limited workforce and inadequate competencies, each step in this process is delayed. These limitations result in a longer time required to implement EMRs than initially expected.

When the available workforce is insufficient or lacks the necessary skills, they struggle to adapt to the new system. As a result, training and adaptation to the EMR system require additional time, which, in turn, delays the overall implementation process. In addition to delays, resistance to change is also a significant consequence of limited human resources. Workers who are not familiar with new technology often exhibit resistance to change. Discomfort and uncertainty regarding the new system can hinder the adoption of EMRs.

This resistance may arise from various factors, such as a lack of understanding of the benefits of EMRs, fear of changing work methods, and concerns about their ability to adapt to new technology. When workers feel unprepared or unsupported during the transition process, they are likely to reject the change and continue relying on familiar methods.

Another significant impact is the decline in the quality of healthcare services. High workloads and a lack of competent staff can lead to a deterioration in service quality. Errors in medical records, whether in data entry or management, can negatively affect patient care and safety. Mistakes in electronic medical records can have severe consequences, ranging from inaccurate diagnoses to incorrect treatments. With a heavy workload, staff may not have enough time to ensure that every detail in the medical record is accurate.

Furthermore, a lack of understanding of procedures and standards for managing electronic medical records can increase the risk of errors. This decline in service quality can erode patient trust in

the hospital and even jeopardize their safety. Poor service quality can also impact the overall reputation of the hospital, ultimately affecting the number of patients who choose to seek care there.

Material

In terms of material elements, the availability of computers becomes a primary support for the implementation of electronic medical records. However, there are deficiencies in the hardware that are still inadequate for the operation of electronic medical records, as well as the need for a network that connects related units. Even though these supporting factors exist, challenges arise in the form of a lack of IT infrastructure, such as hardware, software, and databases.

These challenges affect the readiness for the implementation of electronic medical records, which must cover all operations from data input to data control. A computer network refers to a system that connects computers and hardware so they can communicate and share resources such as printers, hard drives, and the internet.

The goal is to ensure information is accurately and error-free transmitted between the sender and the receiver through the chosen communication medium. The internet can be considered a collection of millions of computers spread all over the world and connected to each other. Computers require specific instructions or programs to process digital data.

The staff of the medical records unit, including Pm, also mentioned that the computers are still inadequate for the perfect implementation of electronic medical records. Below is the complete statement:

"The computers here are still lacking; three clinics don't have any computers at all. So, even if EMR is up and running, it still won't be optimal because the availability of computers is not yet complete." – Pm

The researcher also found frequent system errors, imperfect system design, incompatibility with other systems, lack of computer skills, and power outages still occurring at Pertamina Rantau Hospital. In this context, the researcher concludes that the

availability of hardware is insufficient compared to the number of patients and the volume of data that must be processed daily.

The limited number of computers can cause several major problems. First, the workload on the devices increases, accelerating wear and tear, which can eventually lead to operational disruptions and delays in the input and access of medical records data.

The storage capacity of the computers and servers used may not be adequate to store large amounts of data, causing issues with quick and efficient data access. Large data volumes require high processing speeds, and if the computers and applications cannot handle data processing quickly, response times to medical information needs may be delayed, which can affect medical services.

Interview results with informant Pm also indicated that using machines like computers to perform work would be better and more efficient:

"Using computers is actually really good, more efficient and easier, right? It's not difficult to find files either if the electronic medical records are running well." - Pm

However, it is evident that the available materials are not sufficient, and this is one of the reasons why the implementation of electronic medical records at Pertamina Rantau Hospital has not been smooth.

Machine

In terms of machinery, observations and interviews revealed that the availability of WiFi is a supporting factor that facilitates access and connectivity. However, there are also obstacles such as limited knowledge in handling technical issues and inconsistencies in WiFi connection facilities across different rooms.

There are challenges related to software, connection processes, databases, and networks, all of which affect the performance of the electronic medical records management unit. This factor is crucial because adequate hardware and software capabilities are necessary to support innovative information systems like the Hospital Management Information System (SIMRS). Researchers found

that the existing electronic medical records application does not fully meet the needs of the staff in performing their duties, due to inadequate servers and computers.

This view contradicts the theory emphasizing that adequate hardware and software are essential to support innovative information systems like SIMRS. The lack of hardware and software, as well as other elements in the IT infrastructure, indicates that electronic medical records are not yet ready for widespread implementation. Information systems require hardware, software, databases, and networks to perform operations of input, processing, output, storage, and control that transform data resources into useful information. All of this heavily depends on the availability of human resources.

The availability and stability of the internet network are starting points in this analysis. From interviews with Pm, it was found that although the internet network is installed at Pertamina Rantau Hospital, connection stability often becomes an issue that disrupts operations. Below is the complete statement:

"The software here still often errors. I'm afraid that if there is a patient and the EMR cannot be opened, it will hinder patient care. This instability not only disrupts the workflow of medical and administrative staff but can also impede timely medical decision-making." – Pm

Disruptions in accessing or updating medical records data can have serious impacts on patient safety and quality of care.

Besides Pm, another informant from the Information Technology field shared a similar opinion. Below is the complete statement from Bs, a staff member in the Information Technology department at Pertamina Rantau Hospital:

"Yes, the network here still often errors, possibly because of hospital system issues or central system problems. However, whenever there are such issues, I, as the person in charge of IT, try to find solutions as quickly as possible, even though sometimes these system errors slightly disrupt services." - Bs

In conclusion, the availability and quality of machines at Pertamina Rantau Hospital affect the improvement of network infrastructure, security maintenance, and policy development. By addressing these obstacles, the hospital can enhance the effectiveness of EMR implementation, optimize healthcare services, and ensure better patient satisfaction in the long term.

Method

It is currently known that there is a medical record information system using technology such as electronic medical records at Pertamina Rantau Hospital. It is stated that Pertamina Rantau Hospital has already implemented electronic medical records. However, based on observations, researchers found that medical records at Pertamina Rantau Hospital still do not use electronic-based records. Registration is still done using paper, which is then delivered to the clinic, and machines are used to register in the Hospital Management Information System.

Based on interviews, it was found that standard operating procedures (SOP) or policies related to the implementation of electronic medical records at Pertamina Rantau Hospital are still not available. Here are the interview results:

"We still don't have an SOP for the implementation of electronic medical records. Many other SOPs regarding medical records are also still lacking because medical records at this hospital have only been operational for one year. In the previous year, medical records were handled by staff who were not graduates in medical records. So, the SOP for the implementation of electronic medical records has not yet been created by the hospital management."

Standard operating procedures or policies related to the implementation of electronic medical records are key to the successful operation of electronic medical records in a hospital. Therefore, the hospital management must create standard operating procedures related to the mandatory implementation of electronic medical records at Pertamina Rantau Hospital.

The existence of a decree regulating the mandatory use of EMR is also crucial in supporting effective implementation. Without clear managerial support and structured regulations, the adoption of EMR at the hospital level can be hindered.

This decree not only establishes the responsibility for using EMR but also provides legitimacy and official support from hospital management in promoting the use of this technology. The lack of a clear decree indicates a lack of commitment and coordination from the managerial side in supporting digital transformation in healthcare services.

On the regulatory side, although there are regulations from the Ministry of Health (PERMENKES) mandating the use of EMR, its implementation at Pertamina Rantau Hospital still faces obstacles. Internal factors such as inadequate infrastructure, limited resources, or even cultural resistance among medical staff can be significant barriers. Existing policies may not always be sufficient to effectively address these challenges without strong managerial support and full commitment from the entire healthcare team.

CONCLUSION

The transition of medical records from manual to electronic forms, mandated for all healthcare facilities in Indonesia, is a significant step taken by the Ministry of Health of the Republic of Indonesia. However, it cannot be denied that the implementation of electronic medical records faces numerous challenges, primarily from four major factors.

The first factor is the "man" factor, where there is still a shortage of medical recorders, and many tasks that should be managed by medical recorders are still handled by other hospital units.

The second and third factors are "material" and "machine" inadequacies, such as system errors, imperfect system design, lack of compatibility with other systems, insufficient computer skills, and power outages.

The last factor is the "method" factor, which includes the lack of clear standard operating procedures or policies for implementing electronic medical records at Pertamina Rantau Hospital. Support from the government, both the Ministry of Health and related institutions, is crucial to realizing the optimal digital transformation of the health system in Indonesia.

The hospital should consider recruiting new staff for the medical records unit and the hospital's information technology unit for regular checks on machines and materials. For the "machine" and "material" factors, it is recommended to add more computers in the clinics and optimize the network and system to improve patient services. Lastly, addressing the "method" factor, which is key to overcoming all obstacles in implementing electronic medical records, the hospital must create standard operating procedures related to the implementation of electronic medical records at Pertamina Rantau Hospital.

REFERENCES

- Alfansyur, A., & Mariyani. (2020). Seni Mengelola Data: Penerapan Triangulasi Teknik, Sumber Dan Waktu pada Penelitian Pendidikan Sosial. *Historis*, 5(2), 146–150.
- Amin, M., Setyonugroho, W., & Hidayah, N. (2021). Implementasi Rekam Medik Elektronik: Sebuah Studi Kualitatif. ... Dan Sistem Informasi). <http://jurnal.mdp.ac.id/index.php/jatisi/article/view/557>
- Ana Fitriani, Fita Rusdian Ikawati, A. J. R. (2022). evaluasi penerapan SIMRS di rumah sakit putra waspada dengan metode HOT-FIT. 02, 73–80. <https://jurnal.poltekkes-soepraoen.ac.id/index.php/jurmiki/article/view/438/264>
- Aulia, A. R., Sari, I., Studi, P., Medis, R., Informasi, D., Piksi, P., & Bandung, G. (2023). analisis rekam medis elektronik dalam menunjang efektivitas kerja di unit rekam medis di rumah sakit hermina pasteur. 7, 21–31.

- Ekasari, R., Pradana, M. S., Adriansyah, G., Prasnowo, M. A., Rodli, A. F., & Hidayat, K. (2017). Analisis Kualitas Pelayanan Puskesmas Dengan Metode Servqual. *Jurnal Darussalam: Jurnal Pendidikan, Komunikasi Dan Pemikiran Hukum Islam*, 9(1), 82. <https://doi.org/10.30739/darussalam.v9i1.118>
- Hidayatulloh, M. D., Rizkhika, S., & Qomariyah, S. N. (2022). Analisis Identifikasi Unsur 5M Penyebab Terjadinya Duplikasi Nomor Rekam Medis Di Rumah Sakit Muhammadiyah Lamongan Bulan Januari Sampai Dengan Maret 2022. *Prosiding Seminar Informasi Kesehatan Nasional (SIKESNAS)*, 340, 185–191.
- Khasanah, M. (2020). Tantangan Penerapan Rekam Medis Elektronik Untuk Instansi Kesehatan. *Jurnal Sainstech Politeknik Indonusa Surakarta*, 7(2), 50–53.
- Maha Wirajaya, M. K., & Made Umi Kartika Dewi, N. (2020). Analisis Kesiapan Rumah Sakit Dharma Kerti Tabanan Menerapkan Rekam Medis Elektronik. *Jurnal Kesehatan Vokasional*, 5(1), 1. <https://doi.org/10.22146/jkesvo.53017>
- Nofita, I., Rafsanjani, T. M., Ridhwan, M., Aceh, B., Yani, E. D., Maulina, N., Rafsanjani, T. M., Cahyaningrum, N., Wulandari, R. M., Besar, K. A., Muhammad, R., Syam, B., & Rafsanjani, T. M. (2023). Ketua Redaksi Dr. Drs. Slamet Isworo, M. Kes Editorial Fitria Wulandari, SKM, M. Kes Admin Lice Sabata, SKM IT Oki Setiono, M. Kom Layout Puput Nur Fajri, SKM Reviewer Enny Rachmani, SKM, M. Kom, Ph. D Dr. dr. Zaenal Sugiyanto M. Kes Et. 22(1).
- Peraturan Menteri Kesehatan Republik Indonesia. Nomor Tahun 2022 Tentang Rekam Medis Elektronik. Jakarta
- Prasanti, D. (2018). penggunaan media komunikasi bagi remaja perempuan dalam pencarian informasi kesehatan. 6(1), 13–21.
- Ramdani, R., Gilang, G., & Sandinirwan, I. (2023). Tingkat Kesuksesan Rekam Medis Elektronik berdasarkan Perspektif Perawat di RS Hermina Sukabumi : Studi Metode Campuran. 4(5), 933–943.
- Rumondang, C., Aziz, A., & Novita, A. (2023). Analisis Kesiapan Implementasi Rekam Medis Elektronik Dengan Pendekatan Sumberdaya Manusia, Budaya Organisasi, Tata Kelola Kepemimpinan Dan Infrstruktur Di Rs Citama. *Nusing Update*, 14(4), 490–501.
- Silalahi, R., & Sinaga, E. J. (2019). Perencanaan Implementasi Rekam Medis Elektronik Dalam Pengelolaan Unit Rekam Medis Klinik Pratama Romana. *Jurnal Manajemen Informasi Kesehatan Indonesia*, 7(1), 22. <https://doi.org/10.33560/jmiki.v7i1.219>
- Studi, P., Industri, T., Teknik, F., Komputer, D. A. N., & Batam, U. P. (2022). PELAYANAN PADA PT INDOCARE PACIFIC.
- Tania, A., Putri, D., Kesehatan, M. P., Administrasi, D., Kesehatan, K., Ilmu, F., Masyarakat, K., Indonesia, U., & Indonesia, U. (2023). Challenges in implementing electronic medical record in Indonesia healthcare facilities. *Jurnal Medika Utama*, 4(3), 3427–3431.
- Ulfa, H. M. (2018). Analisis Unsur Manajemen dalam Pengolahan Rekam Medis di Rumah Sakit TNI AU Lanud Roesmin Nurjadin. *KESMARS: Jurnal Kesehatan Masyarakat, Manajemen Dan Administrasi Rumah Sakit*, 1(1), 20–25. <https://doi.org/10.31539/kesmars.v1i1.146>
- Undang-undang Republik Indonesia. No. 44 Tahun 2009. Tentang Rumah Sakit. Jakarta.
- Wardani, R., Tarbiati, U., Fauziah, T. R., & ... (2022). Strategi Pengembangan Rekam Medis Elektronik di Instalasi Rawat Jalan RSUD Gambiran Kota Kediri. <https://madaniya.pustaka.my.id/journals/contents/article/view/135>

Wardhina, F., & Rahmadiliyani, N. (2022).
Sosialisasi Pengembalian Berkas Rekam
Medis Rawat Inap di RSUD Mawar Banjarbaru.
Jurnal Pengabdian Masyarakat Indonesia,
2(3), 231–235.
<https://doi.org/10.52436/1.jpmi.609>