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## An Overview of the use of Electronic Medical Records in Outpatient Services at JIH Purwokerto Hospital

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### ABSTRACT

*Electronic Medical Records (EMRs), which utilize digital technology, have been implemented in several hospitals in Indonesia and offer advantages such as easier retrieval of patient data and medical history, improved time efficiency, greater effectiveness, and enhanced data security. This study aimed to describe the use of EMRs in outpatient services at JIH Purwokerto Hospital. The research employed a descriptive qualitative design using interview methods to collect data. The findings indicated that, in terms of task implementation, staff performance was considered good and effective in supporting the application of EMRs in outpatient services. From the program planning perspective, the EMR system had been successfully implemented and continuously developed with updated features. Regarding regulations and programs, the hospital had established Standard Operating Procedures (SOPs) for electronic medical records as well as policies to ensure the confidentiality of medical record data. In terms of benefits, ideal conditions, and obstacles, the implementation of EMRs provided significant advantages for users; however, the ideal implementation had not been fully achieved due to several existing challenges.*

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### 1. INTRODUCTION

The rapid advancement of globalization, science, and technology has brought various impacts and benefits to human life, including improvements in healthcare services, particularly in hospitals. According to Law of the Republic of Indonesia Number 17 of 2023 concerning Health, healthcare services refer to all forms of activities and/or a series of service activities provided directly to individuals or communities to maintain and improve public health status in promotive, preventive, curative, rehabilitative, and/or palliative forms. Based on Presidential Regulation of the Republic of Indonesia Number 17 of 2023 concerning Health, a hospital is a healthcare facility that provides comprehensive individual healthcare services through promotive, preventive, curative, rehabilitative, and/or palliative services by offering inpatient, outpatient, and emergency care.

Outpatient services are one of the hospital work units that provide treatment for patients without hospitalization and with services not exceeding 24 hours, including all diagnostic and therapeutic procedures<sup>10</sup>. Currently, outpatient services have become a major concern for hospital management because the number of outpatient visits exceeds other service types. Outpatient services reflect the quality of services provided by hospitals to their customers. Therefore, outpatient services must be effective and efficient in delivering quality care to patients, as they can increase market share and provide financial benefits for hospitals<sup>1</sup>.

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One of the most essential healthcare services in health facilities is medical record services, which function to record, document, and manage information accurately and promptly to support decision-making processes<sup>6</sup>. To improve the quality and efficiency of data management in medical record services, a system capable of processing data with high speed, precision, and accuracy is required. Therefore, Electronic Medical Records (EMRs) were developed as a solution<sup>2</sup>. Law of the Republic of Indonesia Number 1 of 2024 concerning Electronic Information and Transactions states that institutions must provide electronic documents and electronic backup records and connect them to designated data centers to ensure data security. Other institutions are required to create electronic documents and electronic backups in accordance with their data protection needs.

Electronic medical records, which utilize digital technology, have now been implemented in several hospitals in Indonesia, replacing paper-based medical records. Minister of Health Regulation Number 24 of 2022 concerning Medical Records explains that Electronic Medical Records are medical records created using electronic systems for the implementation of medical record management. EMRs aim to improve the quality of healthcare services, provide legal clarity in the administration and management of medical records, and ensure the security, confidentiality, integrity, and availability of medical records in the implementation of integrated digital medical record systems.

Effectiveness itself is a measure of how well an organization operates. An organization is considered effective if it successfully achieves its predetermined objectives. To assess effectiveness, indicators are required to measure the outcomes and impacts of program activities in achieving goals. Goal achievement refers to the extent to which outpatient services meet the needs and expectations of patients<sup>9</sup>.

Based on previous research on the use of Electronic Medical Records to support the effectiveness of outpatient registration at Dr. Ranny Clinic, the findings showed that EMRs are very easy to use, especially in searching for patient data and medical history, thereby saving time, increasing effectiveness, and ensuring that patient data are well stored and not easily lost. Similarly, on the effectiveness of EMR use in outpatient services at Darul Arqam Clinic Garut demonstrated that after the implementation of the My Klinik application, there were significant improvements in service processes provided by medical staff to patients<sup>6</sup>. The study confirmed that EMR utilization was highly effective and positively contributed to facilitating service processes<sup>2</sup>.

Based on these previous studies, the researcher is interested in conducting a study entitled "Description of the Use of Electronic Medical Records in Outpatient Services at JIH Purwokerto Hospital." This study is expected to contribute to the development of knowledge and technology in the healthcare sector, particularly in health information systems. It is also expected to provide input for hospitals in improving the quality of outpatient services through the use of electronic medical records.

## 2. RESEARCH METHOD

This study employed a descriptive qualitative research design. According to descriptive research is a method used to describe or provide an overview of the object under study based on collected data or samples as they are, without conducting broader generalizations<sup>15</sup>. Qualitative research, meanwhile, is a methodological approach aimed at understanding, exploring, and analyzing in depth the complex aspects of human interactions, behaviors, and social phenomena, typically utilizing data collection techniques such as in-depth interviews, participant observation, focus group discussions, and document analysis<sup>3</sup>.

The variable examined in this study was the use of Electronic Medical Records (EMRs), with sub-variables including staff task implementation, program planning, regulations and policies, and benefits, ideal conditions, and obstacles. The research object was the Electronic Medical Record system in outpatient services, while the research subjects consisted of the head of the medical record unit, admission staff, a pediatric clinic nurse, and IT personnel, as they were directly involved in the implementation of EMRs<sup>3</sup>.

Data were collected through primary and secondary sources. Interviews were conducted with the head of the medical record unit, admission staff, a pediatric clinic nurse, and IT personnel. The interview results were documented manually using written notes and digitally using a voice recorder via a mobile phone. Secondary data were derived from journals, images, archives, and hospital documents.

Documentation studies were conducted to review hospital records such as Standard Operating Procedures (SOPs) to strengthen findings and support data triangulation.

Data analysis was carried out systematically by organizing data from interviews, field notes, and documentation, then categorizing, synthesizing, and identifying patterns before drawing conclusions<sup>15</sup>. The analysis process involved data reduction by simplifying and focusing on essential information to identify themes and patterns; data presentation in the form of concise descriptions or narrative texts; and conclusion drawing and verification. Initial conclusions were tentative and subject to change if not supported by sufficient evidence; however, as data collection progressed and evidence became consistent, conclusions were considered credible. Ultimately, the study produced a comprehensive description of the use of Electronic Medical Records in outpatient services at JIH Purwokerto Hospital.

### 3. RESULT AND DISCUSSIONS

#### 3.1 General Overview of JIH Purwokerto Hospital

Jogja International Hospital (JIH) Purwokerto was established on September 1, 2020, and is managed by PT. Unisia Medik Anugerah (PT. UMAA). The company was founded by Bambang Pediantoro Sunarto, SE, MM, CPHR; Drs. Suwarsono, M.A; dr. Muhammad Syamsudin, SH, MH; and Suharto, SE, M.Si, as stated in the Deed of Establishment No. 1 dated September 1, 2020, issued before Notary Dewi Parawasti Kusmarini, SH, M.Kn, in Banyumas. The company received legal approval from the Ministry of Law and Human Rights of the Republic of Indonesia under Decree Number AHU-0047040.AH.01.01.YEARS 2020 on September 17, 2020. PT. Unisa Medika Farma (PT. UMF) serves as the main shareholder, later joined by PT. Cipta Medika Persada (PT. CMP) in March 2021 and PT. Alfa Global Mandiri (PT. AGM) in May 2021.

JIH Purwokerto is strategically located on Jl. KH. Ahmad Dahlan, Dusun III, Dukuhwaluh, Kembaran District, Banyumas Regency, Central Java. The hospital officially began operations on April 27, 2022, based on Operational License Number 02240100925090002 issued on April 20, 2022, by the Head of the Banyumas Investment and One-Stop Integrated Service Office (DPMPTSP). The hospital held its Grand Opening on July 30, 2022, under the name JIH Purwokerto Hospital.

#### 3.2 Characteristics of Research Informants

The researcher conducted structured interviews with four Informants: the Head of the Medical Record Unit, a pediatric clinic nurse, an admission staff member, and an IT officer. These interviews were carried out to collect data for the study entitled "Description of the Use of Electronic Medical Records in Outpatient Services at JIH Purwokerto Hospital." The following table presents the characteristics of the research Informants:

Table 1. Informant Characteristics

Name	Gender	Last Education	Length of Employment	Position/Responsibility
<b>Informant 1</b>	Male	Bachelor of Public Health	2 Years	Head of Medical Record Unit
<b>Informant 2</b>	Female	Bachelor of Psychology	2 Years	Admission Staff
<b>Informant 3</b>	Female	Diploma in Nursing (D3)	2 Years	Pediatric Clinic Nurse
<b>Informant 4</b>	Female	Bachelor of Informatics Engineering	2 Years	IT Operational Officer

#### 3.3 Data Analysis Based on Interview Results with Informants

Based on the interviews conducted with each informant, the researcher analyzed and organized the data by integrating the information obtained in accordance with the research objectives. The purpose of this

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study was to describe the use of Electronic Medical Records (EMRs) from the perspectives of staff task implementation, program planning, regulations and policies, as well as benefits, ideal conditions, and obstacles. The results of the interviews with the four informants are presented as follows.

a) Description of EMR Use from the Aspect of Staff Task Implementation

Based on the interview results, each informant explained their primary responsibilities related to the implementation of Electronic Medical Records (EMRs) at JIH Purwokerto Hospital. The Head of the Medical Record Unit is responsible for planning and evaluating medical record activities and supporting EMR implementation, while technical system management is handled by the hospital's IT team. The medical record unit focuses on data management and processing across all service units, including the emergency department, outpatient, inpatient, laboratory, and radiology services, using the hospital's internal SIMRS system called *Evizia*. The admission staff is responsible for patient registration, data input for new and returning patients, and processing payments. The pediatric clinic nurse manages patient documentation, including subjective and objective assessments, nursing diagnoses, and patient care documentation within the EMR system. The IT officer manages system administration, including user account creation and access rights management, although system development is handled by a third party.

Overall, most informants stated that EMR implementation has been effective. It improves efficiency, minimizes data errors, accelerates service delivery, ensures legible documentation, simplifies data retrieval, and reduces the need for large physical storage space. However, the IT officer noted that their role is limited to system administration rather than direct EMR usage.

Key factors that must be considered in EMR implementation include accuracy in data entry, computer proficiency, adequate internet connectivity, proper data saving procedures, compliance with user access authority, and maximized system utilization according to assigned roles.

Regarding training, all informants confirmed that specific training is provided. New staff members are required to undergo SIMRS training before starting work, conducted by the IT team. Training includes system introduction, hands-on practice using a simulation application, and retraining sessions when new features are introduced or when staff experience difficulties. Training duration varies depending on the staff role and level of understanding, ranging from several hours to several days, with periodic refreshment sessions conducted quarterly or semiannually.

b) Description of EMR Use from the Program Planning Aspect

Based on the interview results, all informants stated that Electronic Medical Records (EMRs) have been implemented since the hospital began operations in April 2022. This indicates that EMRs have been integrated into the hospital system from the outset.

Regarding the outpatient EMR workflow, the process is fully computerized. Patients register either through an application, call center, or directly at the admission desk. Those with booking codes can scan a barcode at a self-service kiosk to obtain a queue number and proceed directly to the clinic. Nurses conduct anamnesis and input patient data into the EMR system, followed by the physician's examination and documentation. Prescribed medications are electronically transmitted to the pharmacy system without manual notes. Patients then proceed to billing and pharmacy services, with all transactions digitally recorded. The system used is integrated, allowing efficient coordination between administrative staff, nurses, doctors, and pharmacy units.

In terms of program achievements, most informants considered the EMR implementation successful, as it has facilitated service delivery and has been consistently utilized since the hospital's establishment. However, from the nursing perspective, some forms are still completed manually due to workload considerations and the practicality of fully digitizing all documentation.

For future planning, the hospital conducts annual evaluations through the medical record committee in collaboration with the IT department. System development is based on user needs, including feature updates and improvements. Proposed enhancements are reviewed in terms of benefits and feasibility before receiving approval from hospital management. Overall, EMR development remains ongoing, adaptive, and aligned with service demands.

c) Description of EMR Use from the Regulatory and Policy Aspect

Based on the interview results, all informants confirmed that the implementation of Electronic Medical Records (EMRs) at JIH Purwokerto Hospital is governed by formal regulations. These include guidelines, Standard Operating Procedures (SOPs), and official decrees issued by hospital management. The EMR policy framework is incorporated into IT service guidelines and is formalized through a Director's Decree. These regulations are considered essential, particularly in supporting hospital accreditation processes.

Regarding data confidentiality, the hospital enforces strict access control policies. Each staff member is assigned an individual account and password according to their role and authority within the system. Access rights differ based on work units and responsibilities, and user accounts must not be shared with others. Staff are prohibited from disclosing passwords, including to interns or trainees, and are encouraged to regularly update their passwords to maintain system security. Access authorization is formally regulated through an official decree that specifies user roles and system modules accessible to each position.

The content of the SOP and EMR guidelines includes legal references to information technology and medical record regulations, detailed procedures for EMR usage, data entry standards, privacy and confidentiality policies, data backup and storage procedures, and clear identification of responsible units. The guidelines provide a general framework, while the SOP outlines more detailed operational instructions to ensure accurate, secure, and compliant EMR implementation.

d) Description of EMR Use from the Aspects of Benefits, Ideal Conditions, and Obstacles

Based on the interview findings, the implementation of Electronic Medical Records (EMRs) has provided significant benefits to JIH Purwokerto Hospital. Informants reported improved efficiency in space utilization, reduced need for physical storage, minimized staffing requirements, and lower operational costs. The system supports paperless operations, accelerates service delivery, simplifies patient registration, enhances documentation clarity, and reduces manual writing errors. From the patient perspective, EMRs minimize the need for printed documents, as invoices and other records can be sent digitally. Overall, EMR implementation contributes to time efficiency, cost savings, and improved service quality.

However, several obstacles were identified. Human error due to lack of accuracy during data entry remains a challenge, particularly during the transition from manual to computerized systems. System downtime, whether planned or unplanned, can temporarily disrupt services. To address this, the hospital has prepared manual forms for each unit as a contingency measure, which are later reintegrated into the EMR system once it is restored. Additional challenges include unauthorized sharing of user accounts, incomplete data entry according to standards, and the existence of some forms that are still completed manually. These issues are managed through monitoring, tracking system usage, reporting to management, retraining, and ongoing evaluation.

Regarding ideal conditions, the hospital aims to achieve full digitalization with minimal paper usage, improved system features, and optimal efficiency in workforce and operational costs. While most informants believe that the current implementation is already effective and largely achieved, further enhancements are expected, such as additional features (e.g., electronic signatures) and the integration of all forms into the system. Continuous evaluation and system refinement remain priorities to ensure the EMR system becomes more comprehensive and fully optimized.

#### 4. DISCUSSION

Based on the research findings obtained by the researcher, the discussion can be presented as follows:

##### 4.1 EMR Use from the Aspect of Staff Task Implementation

The implementation of EMRs at JIH Purwokerto Hospital has been carried out effectively according to established procedures. Admission staff are responsible for patient registration and data entry, nurses conduct anamnesis and document examination results, and medical record staff plan, evaluate, and

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monitor EMR completeness to ensure compliance with standards. The system used is SIMRS EVIZIA, an internally developed hospital information system under the JIH Group. The IT team acts as system administrator, managing user accounts and system maintenance, while development is supported by third parties.

The implementation has improved efficiency in data retrieval and service delivery, consistent with previous findings that EMRs reduce workload and save time due to ease of access and use<sup>7</sup>. Accuracy in data entry, computer literacy, and timely data saving are essential to prevent errors. Training plays a crucial role in supporting EMR implementation. New staff receive SIMRS training before starting work, and periodic refreshment training is conducted. Simulation tools such as GAMI are used to support learning and adaptation<sup>16</sup>.

#### **4.2 EMR Use from the Program Planning Aspect**

Program planning has been implemented effectively. EMRs have been used since the hospital began operations on April 27, 2022, in compliance with Ministry of Health Regulation No. 24 of 2022, which mandates full EMR implementation by December 31, 2023. Outpatient services are fully computerized. The workflow begins with registration, followed by nursing assessment, physician examination, electronic prescription transmission to pharmacy, and digital billing.

Program achievements include full EMR implementation in outpatient and emergency services, while inpatient services are mostly digital with some manual forms remaining. Future development is based on user requests and evaluated in terms of benefits and feasibility before approval by hospital management. Continuous system updates are conducted regularly.

#### **4.3 EMR Use from the Regulatory and Policy Aspect**

Regulations and policies governing EMR implementation have been effectively established. The hospital has issued guidelines and Standard Operating Procedures (SOPs) based on national regulations, including Minister of Health Regulation No. 24 of 2022. These guidelines serve as legal and operational references, particularly for accreditation purposes.

Data confidentiality is strictly maintained through role-based access control. Each staff member has a unique username and password, with different modules assigned according to their responsibilities. This aligns with previous studies emphasizing the importance of differentiated user access to ensure data security. The system defines three levels of access: data entry, data correction (within 2×24 hours), and data viewing<sup>13</sup>.

#### **4.4 EMR Use from the Aspects of Benefits, Ideal Conditions, and Obstacles**

EMR implementation provides significant benefits, including increased efficiency, reduced paper usage, lower operational costs, faster service processes, and improved productivity<sup>2</sup>. Patients also benefit from improved convenience and digital documentation, such as electronic invoices sent via WhatsApp<sup>2</sup>.

However, several challenges remain. System downtime both planned and unplanned can disrupt services. To mitigate this, the hospital prepares manual forms as a contingency plan and re-enters data once the system is restored. Additional issues include incomplete documentation, user non-compliance with standards, and unauthorized password sharing. Monitoring and reporting mechanisms are implemented to address these problems<sup>4</sup>.

The ideal condition expected is full digitalization with minimal paper usage. While EMR implementation is largely effective, some forms still require manual signatures, such as general consent forms. Continuous system improvement and feature enhancement remain ongoing priorities to achieve full optimization.

## **5. CONCLUSION AND RECOMMENDATION**

Based on the research conducted at JIH Purwokerto Hospital, it can be concluded that the implementation of Electronic Medical Records (EMRs) in outpatient services has generally been effective. From the aspect of staff task execution, each unit admission staff, nurses, medical record officers, and IT has performed its role well, supporting efficient data management and faster service delivery, accompanied by appropriate training.

From the program planning perspective, EMRs have been implemented since the hospital began operating in April 2022 and continue to be developed according to user needs. In terms of regulations and policies, implementation is supported by official guidelines, SOPs, and role-based access control to ensure data confidentiality and system security.

Although EMR implementation provides significant benefits such as improved efficiency and reduced paper usage, challenges remain, including system errors and network instability. The ideal goal of full digitalization has not been completely achieved; however, overall, EMR implementation has delivered substantial advantages for the hospital.

To further optimize EMR implementation, it is necessary to strengthen policies and provide continuous guidance to staff to ensure that electronic medical record documentation complies with established standards. Additionally, future research should involve a larger number of informants to obtain more comprehensive and representative findings.

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