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# Analysis of the Digitalization of Inpatient Informed Consent Forms in Supporting the Implementation of Electronic Medical Records at the West Java Provincial Occupational Health Regional Hospital

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**Abstract:** Digital transformation in the healthcare sector is part of the national strategic agenda to improve healthcare quality, operational efficiency, and data integrity. This study aimed to analyze the digitalization of inpatient informed consent forms in supporting the implementation of electronic medical records (EMRs). A descriptive quantitative design was employed, involving a sample of 234 medical record files selected using purposive sampling. Data were collected through observation, document review, and interviews. The findings showed that, among the 234 files examined, 221 (94.4%) manual informed consent forms were complete, whereas only 48 (20.5%) were available in the EMR system. Of the complete forms, only 45 (20.4%) had been uploaded to the EMR, while 176 (79.6%) had not been uploaded. Among the 13 incomplete forms, 3 had nevertheless been digitalized and uploaded to the EMR. These findings indicate the need to improve the digitalization of informed consent forms by optimizing scanning and uploading processes, establishing relevant policies and standard operating procedures (SOPs), strengthening healthcare professional compliance, and developing electronic signature implementation that is directly integrated into the EMR system.

**Keyword:** Registration, Informed Consent, Electronic Medical Records, Inpatient Care.

## INTRODUCTION

The development of digital technology in society has driven digital transformation in healthcare services, with a focus on the development of health data, healthcare applications, and platform-based health technology ecosystems. Digital transformation in the healthcare sector is part of the national strategic agenda to improve the quality of healthcare services, operational efficiency, and data integrity, while ensuring that healthcare services can be easily accessed by the public. One manifestation of digital transformation in hospitals is the implementation of Electronic Medical Records (EMRs). EMRs enable patient health data to be recorded, stored, and managed in a more organized, structured, systematic, and sustainable manner, thereby supporting continuity of care and faster, more accurate decision-making (Pristiya Maulaningrum et al., 2025).

The implementation of EMRs is no longer merely an option, but a necessity. Article 3 paragraph (1) of the Regulation of the Minister of Health of the Republic of Indonesia Number 24 of 2022 concerning Medical Records requires healthcare facilities to maintain medical records electronically. This policy is aligned with digital transformation efforts in the health sector aimed at creating an integrated, accurate, and readily accessible information system for healthcare professionals. Consequently, medical services can be delivered more quickly and appropriately, while improving patient safety. In addition, EMRs can improve administrative efficiency, reduce medical errors, and enhance the quality of health data.

One of the most important components of medical records, whether electronic or conventional, is informed consent or consent to medical treatment. Based on the Regulation of the Minister of Health of the Republic of Indonesia Number 290/MENKES/PER/III/2008, informed consent is defined as consent given by a patient or the patient's family for a medical procedure after receiving a complete explanation of the proposed medical action. Complete and valid informed consent provides legal protection for both patients and healthcare professionals. Article 293 paragraph (1) of Law Number 17 of 2023 emphasizes that all forms of individual medical services provided by medical or healthcare personnel may only be delivered after obtaining the patient's consent. Therefore, both consent to and refusal of medical procedures must be documented in the medical record.

The evidentiary value of informed consent becomes particularly apparent when the form is used as evidence in legal proceedings, demonstrating that the physician has fulfilled the obligation to provide the necessary information. During a trial, a judge may use the informed consent form to evaluate whether the elements required for the validity of an agreement have been fulfilled or whether deficiencies exist. Thus, medical treatment consent forms play an important role in resolving disputes in the healthcare sector. Informed consent should therefore not be treated merely as an administrative requirement, but should be understood as a means of protecting patients' rights and as a preventive measure for healthcare professionals in anticipating potential legal claims (Dewi et al., 2025).

A previous study by Fitriani and Annisa Ulfah (2024), entitled "Analysis of the Digitalization of ICU Patient Informed Consent Forms in Supporting Electronic Medical Records at Hermina Arcamanik General Hospital," revealed that although the hospital had adopted an EMR system, implementation for medical treatment consent forms often lagged behind. The main barriers included a hybrid administrative process in which physical documents had to be completed first and then manually scanned. This scanning-based digitalization process was considered inefficient and hindered the real-time availability of documents in the EMR system (Fasha Sabila Fitriani, 2024).

In addition, the quality of document digitalization, such as unclear scanning results and delays in uploading documents, can affect the availability and integration of data within the system. Human resource factors, particularly staff compliance in entering data, also substantially influence the successful integration of documents into the hospital information system.

Data integration within electronic medical records is also essential to ensure continuity of care; however, its implementation remains suboptimal in several healthcare facilities.

Based on preliminary observations conducted by the researcher from April to May 2026 at the West Java Provincial Occupational Health Regional Hospital, EMR implementation at the hospital still used a hybrid approach. Several obstacles were identified in the document digitalization process, particularly for informed consent forms. Although the digitalization process had been introduced, its implementation was not yet optimal because informed consent forms that were complete in the manual files were not all available in the electronic system, as scanning and uploading to SIMGOS had not been completed. In addition, an interview with a medical records officer indicated that incomplete informed consent forms were caused by insufficient compliance among healthcare professionals. This was supported by feedback

report data for March: of 225 files analyzed, 196 informed consent forms were complete in the manual files, but only 14 had been uploaded to SIMGOS. These findings indicate that the informed consent digitalization process had not been implemented optimally because many forms were still unavailable in the electronic system (March Feedback Data). Consequently, informed consent could not be accessed through the Electronic Medical Record, thereby hindering optimal EMR implementation and potentially affecting legal aspects, service delivery, documentation, and continuity of patient information.

Based on the problems described above, the researcher was interested in conducting a study entitled "Analysis of the Digitalization of Inpatient Informed Consent Forms in Supporting the Implementation of Electronic Medical Records at the West Java Provincial Occupational Health Regional Hospital."

## METHODS

This study employed a quantitative method with a descriptive approach to provide a systematic, factual, and accurate description of the implementation of informed consent form digitalization in supporting Electronic Medical Record implementation at the West Java Provincial Occupational Health Regional Hospital.

The study was conducted at the West Java Provincial Occupational Health Regional Hospital. The research was focused on the Medical Records Installation and Medical Record Analysis Unit because these units are directly involved in examining the completeness, accuracy, and consistency of patient medical records. The study was conducted from April to May 2026. The data consisted of primary and secondary data. Primary data were obtained through observation and interviews with three hospital staff members: the head of medical records, one medical records officer, and one IT officer. Secondary data were obtained from inpatient medical records.

The population in this study comprised all inpatient medical record documents for April and May at the West Java Provincial Occupational Health Regional Hospital, totaling 559 medical record documents. A sample represents a portion of the overall population and its characteristics; when the population is sufficiently large, research may be conducted using a sample considered representative of the population (Sugiyono, 2023). The sample size was determined using the Slovin formula with a 5% margin of error:

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

Where:
$n$= sample size
$N$= population size (559 files)
$e$= margin of error (0.05)
Based on this calculation, the required sample size was:

$$n = \frac{559}{1 + 559(0{,}05)^2}$$

$$n = \frac{559}{1 + 559(0{,}0025)}$$

$$n = \frac{559}{1 + 1{,}3975}$$

$$n = \frac{559}{2{,}3975} = 233{,}15 \approx 234$$

Therefore, the sample size in this study was rounded to 234 medical record documents.

The sampling technique used was purposive sampling, in which samples are selected based on specific considerations (Sugiyono, 2023). The inclusion and exclusion criteria were as follows:

Inclusion Criteria

1) Inpatient medical record files containing an informed consent form.
2) Informed consent forms available in either manual or digital (EMR) format.
3) Forms that were clearly legible.
4) Medical records whose completeness had been analyzed in the EMR.

Exclusion Criteria

1) Inpatient medical record files containing an informed consent form that was damaged.
2) Informed consent forms without patient identification.

Data were analyzed univariately using descriptive statistics to calculate the frequency and percentage of completeness of manual informed consent forms and their availability in the EMR, which were presented in frequency distribution tables. Data processing consisted of editing (rechecking), tabulation (table preparation), data presentation in tables, and calculation of the percentages of complete and incomplete inpatient medical record documents (Mailakay et al., 2025). The data were processed using SPSS version 25.

## RESULTS AND DISCUSSION

Based on the examination of 234 inpatient medical record files, data were obtained regarding the completeness of manual informed consent forms and the availability of informed consent forms in the EMR according to inpatient ward. This study aimed to determine the extent to which informed consent forms had been digitalized into the EMR system.

**Table 1. Distribution of Informed Consent Form Completeness and EMR Informed Consent Availability by Inpatient Ward**

| Ward | *Manual Informed Consent* | | *Informed Consent in EMR* | | Total |
|---|---|---|---|---|---|
| | Complete | Incomplete | Uploaded | Not Uploaded | |
| Adult | 100 | 7 | 0 | 107 | 107 |
| Pediatric | 26 | 1 | 7 | 20 | 27 |
| VK | 60 | 2 | 30 | 32 | 62 |
| Perinatal | 13 | 1 | 2 | 12 | 14 |
| ICU | 5 | 1 | 3 | 3 | 6 |
| OK | 17 | 1 | 6 | 12 | 18 |
| **Total** | 221 | 13 | 48 | 186 | 234 |

Source: Data processed by the authors (2026)

Based on Table 1, of the 234 medical record files, 221 contained complete manual informed consent forms, while 13 were incomplete. By inpatient ward, the adult ward had the largest number of files, totaling 107, consisting of 100 complete and 7 incomplete informed consent forms. The pediatric ward had 27 files, with 26 complete and 1 incomplete form. The VK ward had 62 files, comprising 60 complete and 2 incomplete forms. The perinatal ward had 14 files, with 13 complete and 1 incomplete form. The ICU had 6 files, with 5 complete and 1 incomplete form. The operating room (OR) had 18 files, with 17 complete and 1 incomplete form.

Regarding the availability of informed consent forms in the EMR by inpatient ward, only 48 of the 234 forms had been uploaded to the system, while 186 had not. The VK ward had the highest number of uploaded forms, with 30, followed by the pediatric ward with 7, the

operating room with 6, the ICU with 3, and the perinatal ward with 2. No informed consent forms from the adult ward had been uploaded to the EMR.

**Table 2. Frequency Distribution of Manual Informed Consent Form Completeness**

| Category | Frequency | Percentage |
|---|---|---|
| Complete | 221 | 94,4 % |
| Incomplete | 13 | 5,6 % |
| Total | 234 | 100,0 % |

Source: Data processed by the authors (2026)

Based on Table 2, most manual informed consent forms were complete, totaling 221 (94.4%), while 13 (5.6%) were incomplete. These findings indicate that most informed consent forms had been completed in accordance with the applicable requirements.

**Table 3. Frequency Distribution of Informed Consent Availability in the EMR**

| Category | Frequency | Percentage |
|---|---|---|
| Uploaded | 48 | 20,5 % |
| Not Uploaded | 186 | 79,5 % |
| Total | 234 | 100,0 % |

Source: Data processed by the authors (2026)

Based on Table 3, of the 234 informed consent forms analyzed, only 48 (20.5%) had been uploaded to the Electronic Medical Record (EMR) system, while 186 (79.5%) had not been uploaded. These findings indicate that the availability of informed consent forms in the EMR system remained low. Although most forms had been completed in manual format, they had not all been digitalized and made available in the electronic system used by the hospital.

**Table 4. Comparison Between Manual Informed Consent Form Completeness and Informed Consent Availability in the EMR**

| Category | | Availability of Informed Consent in EMR | | | | Total |
|---|---|---|---|---|---|---|
| | | Uploaded | | Not Uploaded | | |
| | | N | % | N | % | |
| Manual Informed Consent Completeness | Complete | 45 | 20,4% | 176 | 79,6% | 221 |
| | Incomplete | 3 | 23,1% | 10 | 76,9% | 13 |
| | Total | 48 | 20,5% | 186 | 79,5% | 234 |

Source: Data processed by the authors (2026)

Based on Table 4, 20.5% of informed consent forms had been uploaded to the EMR. Of the 234 files examined, 221 manual informed consent forms were complete, while 186 (79.5%) informed consent forms had not been uploaded. Among the 221 complete manual informed consent forms, only 45 (20.4%) had been uploaded to the EMR. Meanwhile, among the 13 incomplete forms, 3 had nevertheless been uploaded. This finding demonstrates that the level of availability remained very low and had not met the hospital Minimum Service Standard (MSS) target of 100%.

## Discussion

Based on the study conducted at the West Java Provincial Occupational Health Regional Hospital from April to May 2026, a substantial gap was identified between the completeness of informed consent forms in manual files and their availability in the Electronic Medical

Record (EMR). Of the 234 forms, only 48 had been uploaded to the EMR system, while 186 had not. By inpatient ward, the VK ward had the highest number of uploaded forms, with 30, followed by the pediatric ward with 7, the operating room with 6, the ICU with 3, and the perinatal ward with 2. No informed consent forms from the adult ward had been uploaded to the EMR, despite that ward having the largest number of manual forms. These differences indicate that digitalization had not been implemented evenly across all inpatient wards.

Based on the analysis in Table 4, among the 234 files examined, 221 (94.4%) manual informed consent forms were complete, whereas only 48 (20.5%) were available in the EMR. Among the complete forms, only 45 (20.4%) had been uploaded to the EMR, while 176 (79.6%) had not been uploaded. Furthermore, among the 13 incomplete forms, 3 had been digitalized and uploaded to the EMR.

This finding is consistent with the study by Fitriani and Annisa Ulfah (2024) on the digitalization of ICU patient informed consent forms in supporting electronic medical records. Their study found that although the hospital had implemented an EMR system, several informed consent forms had not been digitalized into the EMR because various barriers occurred during the digitalization process.

Although the forms were administratively complete, most had not undergone digitalization through scanning and uploading into the EMR system. Therefore, the digitalization of informed consent forms had not yet optimally supported EMR implementation. In the era of electronic medical records, informed consent should be comprehensively digitalized because it plays an important role in supporting the integrated use of medical information. Informed consent is a fundamental requirement before a medical procedure is performed; it also contains the rights and obligations of patients and healthcare professionals and serves as a form of legal protection (Fitira & Subekti, 2025).

It is therefore essential to ensure that informed consent forms are fully accessible and easily retrievable within the electronic system. If informed consent forms are not successfully digitalized, the electronic medical record may be considered incomplete (Fasha Sabila Fitriani, 2024), because informed consent is an important component of medical record completeness. The main barrier was not the completion of the forms themselves, but rather the digitalization and uploading of documents into the electronic system, together with healthcare professional compliance in carrying out these responsibilities.(Fasha Sabila Fitriani, 2024)

Napitupulu et al. (2025) also stated that the medical record media conversion process at Bogor City Regional Hospital had not been implemented optimally because it continued to face constraints related to limited human resources, suboptimal system integration, and inadequate supporting infrastructure. In addition, the digitalization process remained focused on historical archives, meaning that not all documents were available in real time within the EMR system.

If this condition persists, the objective of Electronic Medical Record implementation—to provide patient information accurately, quickly, accessibly, and in an integrated manner—will not be achieved optimally (Fitrianingsih et al., 2025). In addition to affecting continuity of care, the unavailability of informed consent in the EMR may create difficulties in documentation, medical audits, and legal aspects for hospitals and healthcare professionals.

Based on interviews with informants, the West Java Provincial Occupational Health Regional Hospital still used a hybrid medical record system, combining manual documents with an Electronic Medical Record (EMR) system. The digitalization process began with education and an explanation by the physician regarding the medical procedure to be performed. After the patient or family understood the information provided and gave consent, the informed consent form was signed manually. The signed form was then scanned and uploaded to the EMR system by healthcare professionals.

In practice, the digitalization of informed consent continued to face several obstacles. One major barrier was the lack of clarity regarding the division of duties and responsibilities for scanning and uploading documents to the EMR system. Consequently, there was a tendency

for responsibility to be shifted among healthcare professionals regarding who should perform these tasks. This condition caused the digitalization process to remain suboptimal and potentially resulted in delays or failure to upload informed consent documents into the system. The hospital therefore needs to develop more specific Standard Operating Procedures (SOPs) for digitalization, establish a dedicated digitalization team, and conduct periodic audits of implementation effectiveness (Supian et al., 2024).

Furthermore, full integration of informed consent into the EMR was constrained by regulatory issues and the legal validity of electronic signatures. Although the hospital had attempted to develop a digital informed consent system, uncertainty remained regarding the legal force of electronic signatures for informed consent. Therefore, manual forms with wet signatures continued to be maintained to preserve legal validity. Budiono et al. (2026) similarly stated that the use of electronic signatures for informed consent has not yet become standard practice in many healthcare facilities. Hospitals are obligated to carry out all procedures in accordance with applicable regulations. Accordingly, strengthening internal supervision and optimizing the management system for informed consent form digitalization are urgent tasks that should not be neglected (Rusjdi & Yayat, 2026).

Efforts to improve informed consent digitalization in the EMR and healthcare professional compliance in uploading documents to the EMR system include monitoring and evaluating the completeness of informed consent forms uploaded to the EMR. These activities are conducted routinely through monthly feedback reports containing evaluations of medical record completion, including achievement in uploading digitalized informed consent forms. As a development measure, the hospital has planned to implement electronic signatures using an X-pad. With this electronic signature technology, patients or family members can sign digitally, and the signature can be automatically integrated into the EMR system. The implementation of electronic informed consent is a solution for improving the quality of healthcare services while ensuring that legal and ethical requirements are fulfilled for every medical procedure (Suryandari & Mayuwang, 2025).

## CONCLUSSION

Based on the study analyzing the digitalization of inpatient informed consent forms in supporting Electronic Medical Record (EMR) implementation at the West Java Provincial Occupational Health Regional Hospital, it can be concluded that, of the 234 files examined, 221 (94.4%) manual informed consent forms were complete, whereas only 48 (20.5%) were available in the EMR. Among the complete forms, only 45 (20.4%) had been uploaded to the EMR, while 176 (79.6%) had not been uploaded. Furthermore, among the 13 incomplete forms, 3 had been digitalized and uploaded to the EMR. Although the forms were administratively complete, most had not undergone digitalization through scanning and uploading into the EMR system. Therefore, the digitalization of informed consent forms had not yet optimally supported EMR implementation.

Regarding the availability of informed consent forms in the EMR by inpatient ward, only 48 of the 234 forms had been uploaded to the system, while 186 had not. The VK ward had the highest number of uploaded forms, with 30, followed by the pediatric ward with 7, the operating room with 6, the ICU with 3, and the perinatal ward with 2. No informed consent forms from the adult ward had been uploaded to the EMR, despite the adult ward having the largest number of manual forms. These differences indicate that digitalization had not been implemented evenly across all inpatient wards.

The findings demonstrate a substantial gap between the completeness of informed consent forms in manual files and their availability in the Electronic Medical Record (EMR). This gap was associated with the fact that the digitalization process was still performed manually and with insufficient compliance among healthcare professionals in carrying out their

responsibilities. Thus, the digitalization of informed consent forms had not fully supported EMR implementation. Improvements are therefore required through optimization of document scanning and uploading processes. These measures should be accompanied by the establishment of policies and Standard Operating Procedures (SOPs) for electronic informed consent, stronger monitoring and evaluation to improve healthcare professional compliance, and the development of electronic signatures that are directly integrated into the EMR system.

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