

The Analysis of Medical Document Imaging during Depreciation Files

Rita Anggorowati¹, Sahromi², Isti Alfaini³, Mishbahul Ardhi⁴, Gebi Agustin⁵, Idham Khalid⁶, Denisa Agustina⁷

^{1, 2, 3, 4, 5, 6, 7} Akademi Perekam Medis dan Informatika Kesehatan (APIKES) Bandung

rita_anggoro@apikesbandung.ac.id¹, sahromi@apikesbandung.ac.id²

istialfaini@apikesbandung.ac.id³, misbahulardi@apikesbandung.ac.id⁴

gebiagustin@apikesbandung.ac.id⁵, idhamkhalid@apikesbandung.ac.id⁶

denisaagustina@apikesbandung.ac.id⁷

Abstract

Document Media Transfer is the process of transferring media from hardcopy data to softcopy (digital). So that data or documents in digital format are expected to improve performance within agencies that are directly involved in the use of documents, both in searching for data and for updating data. To find out the implementation of the electronic transfer of medical records, it is necessary to look at the process of implementing the electronic transfer of medical records and the existing constraints. One of the general hospitals owned by the provincial government (anonymous was being used upon request) implemented a process of medical record imaging in April 2013. By using a descriptive case study approach based on in-depth interviews and observation from January to May 2022, the study analyzes the implementation of the medical document imaging process during depreciation files. The subjects of this study consisted of three medical records clerks and one IT officer. The result showed that there were some stages in the process of medical document imaging as well as the depreciation files in which the lack of human resources, no fixed procedure, and work instructions, and no connections between the result of imaging and the Health Information System as well as limited budget for imaging tools for a large-size sheet of medical records has become the obstacle of the whole process.

Keywords: Medical record files, medical records problem analysis, medical document imaging, depreciation files, inactive medical record file storage, descriptive qualitative.

1. Introduction

The efforts to save medical documents/archives can be done in various ways, including preventive and curative efforts [1, 2]. Preventive efforts are carried out in the form of providing adequate storage space and meeting the requirements/standards of storage buildings. This effort is physical protection and the value of document/archive information against danger and interference. This means that preventive measures are carried out on documents/archives through the prevention and implementation of effective storage standards. The rescue of documents/archives through curative measures is carried out if there are elements of destruction to documents/archives, for example by restoration, duplication, or digitization.

According to Government Regulation No. 88 of 1999, current world economic and trade developments require companies to manage their business activities effectively and efficiently, including the management of company documents. Technological support has made it possible for corporate documents created or received on paper or other means to be transferred for storage on microfilm or other media [3-5]. This means that the creation and storage of corporate documents are possible without the use of paper. The use of microfilm or other media saves space,

energy, and time for storing company documents. Furthermore, [6] stated that the imaging system is a process of changing or transferring images in the form of paper or film (radiologists) or medical images (radiology), or medical images such as electrocardiography (EKG), Electro Encephalography (EEG), Cardio Topography (CTG), Ultrasonography (USG), echo Cardiography, and others into software through digital data such as scanners/imaging.

Based on a preliminary study conducted on January 7, 2022, through interviews with the Coordinator of Medical Record Management at a government hospital (pseudonym as RS X upon request), for inactive medical records, the imaging process has been carried out using scanning which has begun to be carried out since April 2013. Arbitrating from the storage room for inactive medical record files in Hospital X which is still attached to the warehouse and there is no special shelf for inactive medical record files, it is important to carry out the imaging process for efforts to save medical records sheets that are still valuable. This is because if the medical record sheet that is still valuable to be stored is only a hard file, there is a possibility that it will be damaged by termites, torn, or other destructive elements. So that if the medical record sheet is still useful, an imaging process is carried out, and if at any time it is needed it can be searched easily and can also be reprinted.

This study aims to determine the imaging process (imaging) in the implementation of shrinking medical record files, to determine the factors in the implementation of the imaging process, and to find out the obstacles in the implementation of the imaging process in X Hospital.

2. Methods

The type of research used in this research is descriptive research with a case study approach. The object of this research is the implementation of imaging in the shrinkage of medical record files at Hospital X. Subjects consisted of 3 medical record officers and 1 IT officer. The subjects in question are the Head of the Medical Record Installation, the Coordinator of Medical Record Management, the Filing Coordinator, and the Head of the IT Installation.

The data collection technique is the observation by observing the implementation of imaging on the shrinkage of medical record files at the hospital and researchers are also involved in the implementation. This interview was conducted by the author with medical records officers and other officers who know about the process of implementing medical record shrinkage and the imaging process to obtain information that supports this research. Respondents in this study were the Head of Medical Record Installation (Respondent A), Coordinator of Medical Record Management (Respondent B), Filing Coordinator (Respondent C), and Head of IT Installation (Respondent D). The documentation study carried out is to examine the Standard Operating Procedures (SOP) that apply at the hospital, especially the permanent procedure regarding the shrinkage of medical record files, and also analyze the medical record files that will be depreciated by sorting out medical record sheets that are still valuable for imaging. imaging). The data analysis technique is done by data reduction.

Later on, the researcher summarizes the results of the interview, looks at observing the imaging process with the help of a checklist, and looks at the procedures and theories as well as regulations regarding the imaging process to compare with the implementation. The most frequently used presentation for qualitative data is in the form of narrative text. Drawing conclusions or verification from the beginning of research is carried out on the meaning of objects, noting patterns, explanations, possible configurations, causal paths, and proportions. From this, a conclusion can be drawn to describe the state of the object of research [6-8].

3. Results & Discussion

a. The Imaging Process in the Implementation of Medical Record Depreciation File

Based on the results of interviews by researchers with medical records officers, the imaging process is one of the stages of the implementation of shrinking medical record files at X Hospital. The imaging process began in April 2013.

According to the hospital's Medical Record File Depreciation Fixed Procedures contained in the hospital, the procedures or procedures for shrinking medical record files are:

- i. The Depository Officer determines the group of medical record numbers to be depreciated;
- ii. In the group of medical record numbers that will be depreciated, the officer will sort the medical record files based on the year data of the patient's visit;
- iii. If it is found that the patient's visit is more than five years old (starting from the last visit until the time of sorting), then the medical record file is declared inactive and taken from the storage rack;
- iv. The medical record officer writes in the inactive medical record file register book;
- v. Inactive medical record files are sorted
- vi. based on medical record number according to the final number group (last two digits) and tied;
- vii. The inactive medical record file is moved from the active medical record file storage room. Furthermore, it is stored in an inactive medical record storage rack with a terminal digit filing system storage system.

In the fixed procedure above, there is no mention of the imaging process in the procedure for shrinking medical record files.

Activities in the implementation of the imaging process at the hospital include:

Medical record sheet sorting

Based on interviews with medical record officers and observations made by researchers, before carrying out the imaging process, the implementing officers first sorted out the medical record sheets. So that not all sheets in the medical record file are carried out by the imaging process. Medical record sheets that are sorted are only medical record sheets that are felt to be preserved or still have value. In the inpatient medical record file, the disaggregated medical record sheets are:

- 1) Summary of incoming and outgoing;
- 2) Doctor's notes;
- 3) Resume;
- 4) Introduction to hospitalization;
- 5) Laboratory results/supporting results;
- 6) Operation report;
- 7) Anesthesia report;
- 8) Pre-post operation;
- 9) Informed consent;
- 10) Identification of the newborn;
- 11) Birth certificate;
- 12) Death certificate.

In the outpatient medical record file, no sorting is done, all outpatient medical record sheets are carried out by imaging. The medical record sheet is usually a clinical history sheet, outpatient laboratory results, referrals, and so on.

Based on interviews with medical record officers, the sorting of medical record sheets at the Hospital X aims for data continuity or continuous data which can be accessed at any time, and also as the completeness of data because not all data is summarized in a medical resume because sometimes there are sheets resume that is not filled at all. The reason why outpatient care is also preserved,

This is because if there is only outpatient treatment needed for legal purposes, the data is still there and can be accessed again.

According to the Circular of the Director-General of Medical Services in 1995 No. HK.00.06.1.501160 regarding Technical Instructions for Procurement of Medical Record Forms and Destruction of Medical Record Archives in Hospitals, medical record sheets which are sorted into procedures for evaluating medical record files, medical record files to be destroyed as follows:

- 1) Summary of entry and exit;
- 2) Resume;
- 3) Operation sheet;
- 4) Identification sheet for live-born babies; 5) Consent sheet; and
- 5) Death sheet.

According to *Permenkes* (Minister of Health Regulation) No. 269 of 2008 article 8 paragraph (2) it is stated that after a time limit of 5 (five) years, medical records can be destroyed except for a summary of discharge and approval of medical action. Law no. 8 of 1997 stipulates that if the company's documents transferred to microfilm or other media are original manuscripts that have authentic evidentiary power and still contain certain legal interests, the company leadership is obliged to keep the original manuscripts.

Scanning Process

Based on interviews with medical record officers, at Hospital X, the imaging process was carried out by scanning. After sorting the medical record sheet, then the sheet is scanned using a print scanner. The print scanner owned by the hospital is a product of Fujitsu. Before starting the scanning process, first, the software for scanning is activated on the computer, then the process is to keep medical records or medical record numbers one by one. One bundle of medical record sheets that have been sorted and sorted, scanned sequentially using a print scanner. After the medical record sheets are sorted, they will then be scanned using a print scanner and will be saved in pdf format. Digitizing documents/archives is a process of converting conventional documents/archives into various forms and media into electronic/digital documents/archives [9, 10]. The imaging storage system is a process of converting or transferring

images in the form of paper or film (radiology) or medical images (radiology) or medical images (ECG, EEG, CTG, USG, Echo, and others) into software via digital data such as scanners/imaging [11, 12].

Storage

Based on interviews with medical record officers, the scanning results are stored in a computer drive in pdf format which is named according to the medical record number. To make sure the scanning results have been stored on the computer, then check the retention folder. Based on interviews with medical records officers, the scanning results were also backed up and stored on an external hard drive. However, during the imaging process, there was only one time to back up the scanned data. This is because the data backup tool or external hard drive is unreadable on the computer. So back up the data by moving it to a flash first and then moving it to an external hard drive on another computer.

To identify the existence of documents/archives that have relevant information in all documents/archives of the organization, a document/archive information system is needed that connects the unity of the files as a whole. Information about files that have been transferred in digital form is more effective if accompanied by digital image displays from documents/archives. The existence of a digital image from a file as a public need in the system will be very helpful for users in obtaining complete, fast, precise, easy, and inexpensive documents/archives [13].

According to [14], one of the conveniences provided by the computer-based electronic filing system is data security. Document security will be guaranteed with a multilevel security level that uses a User ID and password. Likewise, the use of computers allows us to set user authentication and block protection to better ensure that the system will be difficult for illegal access to enter. The ease of backing up data to diskettes or Compact Discs (CD) will also make our data more secure because, in the event of computer system damage, data can still be saved through the backup.

Based on interviews with medical record officers, good medical record data when the imaging process has been carried out can be searched for historical data by reprinting or looking for hard file form. However, so far only new medical records are printed like new patients but with old medical record numbers.

Factors for the Implementation of the Imaging Process

Man

Based on interviews with medical record officers and observations made by researchers, there are special officers in the filing section who are also the implementing officers for the imaging process. This is one of the factors in the implementation of the imaging process in X Hospital.

According to Government Regulation No. 88 of 1999 Article 6 paragraph (3) stipulates that the company's leadership can assign officials within the company concerned who are appointed and responsible for researching and determining the company documents to be transferred. According to the Regulation of the Minister of Health No. 55 of 2013 Article 13 states that in carrying out their work, the Medical Recorder has the authority by the educational qualifications as referred to in Article 3, namely the Associate Expert of Medical Records and Health Information in carrying out the work of medical records and health information in Health Service Facilities. content structure and health standards, for the management of health information.

Money

Based on interviews with medical records officers, X Hospital has the funds needed to purchase equipment that supports the imaging process. This is because the main tool in this imaging process, namely a printer scanner, costs a lot of money. However, these funds can only purchase imaging equipment for A4 and F4 medical record sheet paper sizes.

The program that has been prepared must be accompanied by the required budget. The digitization budget must be adjusted to the analysis of system requirements, availability of equipment, and storage media. Equipment is very important because it is the main factor that absorbs the most budget allocations[15].

Machine

Based on interviews with medical record officers and observations made by researchers, the tools needed are sufficient to support the imaging process. There is a print scanner that can scan multiple medical record sheets in one scan, a computer with sufficient specs to support the imaging process as well as storage, as well as an external hard drive for backing up data with a capacity of 1 tera. In the past, RS X did not have as many computers as it does now while carrying out the imaging process requires a computer with special specs. But now they already have a special computer to carry out the imaging process. This is also one of the factors in the approval of the budget for the scanner.

According to [16], the hardware capabilities analyzed involve processing speed, storage capacity, output quality, ease of input, and others. Meanwhile, the capacity in question is measured based on the number of transactions that can be processed in a certain period. To facilitate the maximum effectiveness of the electronic Filing System, users must know how large the volume of archives is and also generally have a filing system flow. This will facilitate the transition to conventional systems toward the Imaging Document era.

According to Government Regulation 88 of 1999 Article 10 paragraph (1), it is stated that the transfer

of company documents is carried out using equipment and technology that meets the stipulation standards and completeness to guarantee the transfer results are by the original manuscripts of the documents being transferred.

Method

Based on interviews with medical record officers, the inactive file storage system at X Hospital uses an imaging system because it is easier to obtain tools that support this process compared to using microfilm. This hospital does not use microfilm for its storage system because it does not know what microfilm media is and does not know what tools are used.

According to Government Regulation No. 88 of 1999 Article 2 states that every company can transfer documents made or received either on paper or in microfilm or other media. Microfilm is a film that contains recordings of written and or illustrated material in a very small size.

According to [17], microfilm is a process of changing a paper medical record sheet into a negative film that is smaller than an adult's little fingernail and is called microfiche. Microfilm can be in the form of a small roll of film (roll) that collects thousands of images or hundreds of medical record files. this version is good for inactive recording. Another type of microfilm is called a jacket. One sheet of microfilm jacket contains several tens of microphysics collected in one microfilm jacket. Usually, the stages of microfilm implementation are as follows:

- 1) Inactive or rarely used file shrinkage/retention.
- 2) Assessment of files to be retained.
- 3) Provision of microfilm jackets, and
- 4) Alignment of microfilm shape with storage system (adapted to the selected system, e.g. edge group alignment system or other types).

While the imaging process according to [18] is a process of changing or transferring images in the form of paper or film (radiology) or medical images (radiology) or medical images (ECG, EEG, CTG, USG, Echo and others) into the software. through digital data such as scanners/imaging. In manual medical record files (paper-based records) radiology films are stored separately in the radiology unit, while ultrasound, Echo, ECG, and ECG images are usually placed in the medical record file.

Material

Based on interviews with medical records officers, the inactive medical record file storage area at X Hospital is inadequate, namely the storage warehouse which does not only contain medical record files but unused items and there is no special inactive shelf, the storage system with imaging be an alternative that can save medical record sheets that are still valuable. If only the hard file is stored, the possibility of it being damaged is

very large. In addition, this imaging process is used for documentation archives and also as a condition for accreditation at the hospital.

Efforts to save documents/archives can be done in various ways, including preventive and curative efforts. Preventive efforts are carried out in the form of providing adequate storage space and meeting the requirements/standards of storage buildings. This effort is physical protection and the value of document/archive information against danger and interference. This means that preventive efforts are carried out on documents/archives through the prevention and implementation of effective storage standards. The curative rescue of documents/archives is carried out if there are elements of damage to documents/archives, for example by restoration, duplication, or digitization [11].

In various seminars and workshops organized by national and international archival organizations, digitalization efforts (transfer from analog media to digital media) are often mentioned as an unavoidable solution. This is because the obsolescence of analog media ratings will make the storage and maintenance of documents/archives more expensive. Preservation of documents/archives will be lighter if they are transferred to digital form and the originals are kept in their original format [16].

Furthermore, according to [19], retention arrangements must include guidelines detailing what information must be maintained for the duration of its maintenance and its storage media (paper, microfilm, optical disk, magnetic tape, or others).

Obstacles in the Implementation of the Imaging Process

Lack of human resources

Based on interviews with medical record officers, one of the obstacles experienced was the lack of human resources. Because only one person performs the shrinkage and imaging process and does not only shrink medical record files, the officer also assists in filing activities, namely taking medical record files and returning them. So sometimes in a day, it does not carry out the shrinkage of the medical record file due to the large number of patients who have to get their medical records file and also return the medical record file.

Based on the job analysis made by the medical record officer in 2022, the medical record file storage section (filing) should require 6 people with WISN calculations carried out. Currently, there are 3 officers in the medical record file storage section (filing).

According to [20], human resources are an integrated ability of the individual's thinking power and physical power. Behavior and nature are determined by heredity and environment, while work performance is motivated by the desire to fulfill his or her satisfaction. Humans are the person,

while human resources are the totality of the physical power contained in that person. The effectiveness of an organization is strongly influenced by human behavior in the organization.

There are no fixed procedures and work instructions

Based on interviews with medical record officers and observations made by researchers, carrying out the imaging process does not refer to a fixed procedure because in the fixed procedure the shrinkage of the medical record file has not included an imaging process. Job descriptions are only carried out verbally by the Medical Record Management Coordinator to the implementing officer, namely the Filing Coordinator. This makes the officers unclear in carrying out the imaging process.

According to Government Regulation No. 88 of 1999 article 6 paragraph (2) states that the leadership of the company concerned may first establish internal guidelines in the context of transferring company documents.

Each step of digitization must begin with the creation of a master plan as the main reference in implementing the program. This master plan contains policies, plans, funding, operational guidelines (SOP), and other technical matters. This is very helpful if there are problems in the implementation of activities, and it is necessary to review the main reference. One of the contents of the master plan is the standard operating procedure (SOP), the preparation of guidelines is needed to oversee and simplify the operation of the system and equipment used [21].

Imaging results have not been connected to the Hospital Health Information System

Based on interviews with medical record officers, the results of this imaging have not been combined into the Health Information System menu at the hospital. In addition, the process of selecting the retention or shelf-life of medical record files to be depreciated is still manual. Officers hope to maximize the use of the Health Information System, especially for the implementation of shrinking medical record files. The incorporation of imaging results into the Health Information System must be accompanied by approval from the IT Installation. It is necessary to consider whether the IT installation can be integrated with the Health Information System or not because it is the IT installation that creates and manages the Health Information System. IT parties may still consider whether there is sufficient storage space or not to incorporate these imaging results into the Health Information System.

Based on interviews with IT officers, there are plans to incorporate these imaging results into the Health Information System. However, currently, it cannot be implemented because this year the medical record reporting system is being repaired. It is planned that next year an application will be made for the incorporation of imaging results into

the Health Information System. Making the application is very easy because it only adds a menu in the Health Information System.

Digital documents/archives are divided into two. First, documents/archives are stored permanently on the server. Second, other documents that are specific to services, namely files with low dots per inch (dpi) are stored on a server connected to a network that can be accessed by the wider community [22].

According to [23], one of the conveniences provided by a computer-based electronic filing system is being able to connect to a computer network. Users can connect the electronic filing system to the network system, both local and wide area networks. By connecting to the network, users can use the system multi-user. Distributed arrangements will be useful, for example, if an officer with an interest in the company needs to view a particular file, then it is enough to access a computer that is nearby and does not have to come to the administration.

There is no imaging equipment budget for large medical record sheets

Based on interviews with medical record officers, in the imaging process, there are also other obstacles, namely in scanning for ICU patient medical record files with a large medical record sheet size, namely A3 paper size. The existing tools can only scan with A4 and F4 paper sizes, but for larger sizes such as ICU medical record sheets, which are A3 size, scanning cannot be done. The problem with not having a scanning tool that can scan large medical record sheets such as ICU patient medical record sheets is because of limited costs. The program that has been prepared must be accompanied by the required budget. The digitization budget must be adjusted to the analysis of system requirements, availability of equipment, and storage media. Equipment is very important because it is the main factor that absorbs the most budget allocations [24].

5. Conclusion

a. Activities in the imaging process at a government hospital (RS X) include sorting medical record sheets, scanning processes, and storing. The sorting of medical record sheets is by the regulations regarding medical record sheets that still have to be enshrined, but the medical record sheets that are sorted are not only those mentioned in the regulation, this is due to the incompleteness of the resume sheet. The scanning process is carried out using a print scanner for scanning medical record sheets. The scanning results are stored on the computer drive and backed up to an external hard drive, however, backing up the scanned data is not routinely done.

b. The factors in the implementation of the imaging process at X Hospital are grouped into 5, namely man (human resources), money, machine

(machine), method (method), and material. The man element is the presence of a competent officer, money is the budget to purchase imaging support equipment (imaging), the machine is sufficient equipment to carry out the imaging process, and the method is for an inactive medical record storage system using an imaging storage system.) does not use a microfilm storage system, and the material element is for efforts to save medical record sheets which are still valuable because there is no special shelf for inactive medical record files.

c. The obstacles in the implementation of the imaging process at RS X are the lack of human resources, there are no fixed procedures and work instructions, the imaging results have not been connected to the Health Information System, and there is no budget for imaging equipment for large medical record sheets.

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