

An Electronic Records and Document Management System for Health services

(A case study of Mulago Hospital Archives)

BY

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DECLARATION

I **Cranimer Mukwaya** do hereby declare to the best of my knowledge that this graduation project is my original work and that it has never been submitted to any university or any other institution. The literature and citations from other people's work have been duly referenced and acknowledged in the text and bibliography.

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DEDICATION

I dedicate this Piece of work to my Family especially my Parents Mr. & Mrs. Nyanzi for all there contribution towards my studies. Thank you very much for all your support.

ACKNOWLEDGEMENT

I thank Madam Joan Barnett (Stirling university-Scotland) for all her efforts both financially and spiritually, I really don't know how I can thank you, but all I can say is, you are my idol, you have made me what I am today, your contribution has enabled me to have a bright future, thank you very much for the good work.

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ABBREVIATIONS AND ACRYNOMS

MH	Mulago Hospital
ERP	Electronic Recordkeeping Procedures
FDA	Food and Drug Administration
FDG	Focus Group Discussions
DMS	Document Management System
E-R	Entity Relationship
ERDMS	Electronic records and Document Management System
ERMS	Electronic Records Management System
IT	Information Technology
ICPSR	Inter-University Consortium for Political and Social Research
ICT	Information Communication Technology
HYBRID PART	Is a part of a hybrid folder, which has both electronic and non-electronic elements
LAN	Local Area Network
MDAC	Microsoft Data Access Components
ODBC	Open Database Connectivity
PART	Is a segment of a folder. The folder is segmented for management purposes only, and is managed from the folder level.
PC	Personal Computer
RMA	Records Management Application
SQL	Sequence Query Language
SARA	State Archives and Records Administration
TRIM	Total Records Information Management
WAN	wide area network

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ABSTRACT

Mulago Hospital has adopted new technologies that promise to provide significant cost savings and productivity improvements. A by-product of the adoption of this new technology is that business transactions and business decisions are being made electronically. Business records are being created, disseminated and stored in electronic format. The use of these new technologies has improved Mulago's capacity to respond to customer queries and has generally reduced the time required to conduct a business transaction. The adoption of the new technologies has also resulted in a change in the nature of business records. Mulago Hospital has yet to implement processes to ensure that evidence of these business decisions and transactions is properly managed. Failure to implement adequate records management controls now, will result in exposure to litigation, and loss of productivity as employees struggle to find **information** they need in order to do their work. This document proposes the implementation of comprehensive electronic recordkeeping processes and systems to ensure that electronic business evidence at Mulago Hospital is properly managed.

Mulago Hospital uses a manual system for storing, managing and classifying there records in the hospital which makes the search for patient's records very difficult and takes a lot time, most of the records in Mulago Hospital are stored in stores where they can easily be damaged and the security is not that good. A person can easily walk into the store and get the file, this makes the patients file to be in real quandary. The system is so exasperating as a person has to spend a lot of time looking for a persons file and at times records may not be traced because they are so many and in bulk.

Thus a need for an Automated Records and Document management system that will be able to manage all the records in the Hospital, this system will be able to capture data, register all patients records in the database, make searching easier, generate reports for patients, provide security to the records and patients will able to have access to there records within seconds, handle all electronic documents in the Hospital to mention.

1 Introduction

This study is concerned with the implementation of an electronic recordkeeping system at Mulago Hospital Records Department. The study will identify how Mulago Hospital manages its physical records/Manual system and the recommendation for an electronic records keeping system. Importantly the implementation of an electronic recordkeeping system provides protection against the costs of litigation and enables Mulago Hospital to comply with legal recordkeeping obligations.

1.1 Background to the Problem

Mulago Hospital has adopted new technologies that promise to provide significant cost savings and productivity improvements. A by-product of the adoption of this new technology is that business transactions and business decisions are being made electronically. Business records are being created, disseminated and stored in electronic format. The use of these new technologies has improved Mulago's capacity to respond to customer queries and has generally reduced the time required to conduct a business transaction. The adoption of the new technologies has also resulted in a change in the nature of business records. Mulago Hospital has yet to implement processes to ensure that evidence of these business decisions and transactions is properly managed. Failure to implement adequate records management controls now, will result in exposure to litigation, and loss of productivity as employees struggle to find **information** they need in order to do their work. This document conveys the implementation of comprehensive electronic recordkeeping processes and systems to ensure that electronic business evidence at Mulago Hospital is properly managed.

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security is not that good. A person can easily walk into the store and get the file, this makes the patients file to be in real quandary. The system is so exasperating as a person has to spend a lot of time looking for a persons file and at times records may not be traced because they are so many and in bulk.

Filing of the patients records like mortuary identification tags, pathological specimens and patients case notes etc aren't well effected, generation of patients reports is not catered for yet reports about a patients health are very important. Searching for patients records is not effectively done which makes patients wait in long cues for there records. This brings worry because a person ahs a right to access of information with in seconds this shows that a right to information is not well catered for.

Thus a need for an Automated Records and Document management system that will be able to manage all the records in the Hospital, An electronic records and document management system makes it easier to capture data, register all patients records in the database, make searching easier, generate reports for patients, provide security to the records and thus patients are able to have access to there records within seconds.

1.2 Statement of the problem

In the recent past, the rapid growth of the patient turnover at Mulago has led to a significant increase in the records created, handled and maintained. This increase in records has grown at a rate of an estimated 50,000 files per year. This increases considering that the records handling and storage infrastructure has not grown at the same pace leading to the following:

- Lack of sufficient storage space hence the piling of records on the floor within the registries.

- Inability to preserve the condition of records hence compromising the integrity of the same.
- Inability to implement records security measures and audit practices
- Records census and production of other vital statistics is manual hence the accuracy cannot be guaranteed.
- The cluttered, dusty nature of the records in registries is not only an eye – sore but also exposes the record handling staff to health hazards.
- Lack of an archive leading to the loss of vital knowledge to hospital staff and other researchers.

This form of record keeping management does not meet the requirements for standardized, complete, accurate, reliable, accessible and durable evidence on Mulago's activities. Moreover such practices pose unacceptable risks to the capture and management of essential evidence. There is also the distinct possibility of large number of records being lost.

Often than not, officers charged with the responsibility of maintaining such diverse information system are referred to as “Chaos managers” considering that, they cannot efficiently provide their end – users with information in the correct version, context and format to facilitate work processes.(Abstract from JB Information Management Ltd, Document Imaging Proposal,2005)

Mulago Hospital uses the Manual system to manage its records. This system has been in use for a number of years and provides control over all hospital records. Some sections use this system to manage their electronic records by printing paper copies of the electronic records and placing on the appropriate file(s). Other sections have constructed information management systems using Explorer directories on shared drives. This manual system makes searching for records

very difficult as a person has to spend a lot of time looking for files like patient case notes, pathological specimens to mention, this Makes work very difficult.

1.3 Study Objectives

1.3.1 Overall objective

The overall objective of this study to improve productivity, Productivity which is about doing things in less time, by streamlining and consolidating processes, by automating them, and by doing tasks simultaneously rather than sequentially. Automation can increase the amount of work done with available resources. Improvements may result from digitization and process automation, as well as time and storage savings. Adding electronic recordkeeping helps to make better use of information created by these new technologies over longer periods of time.

1.4 Specific objectives

The study seeks to:

- To implement records security measures and audit practices
- To aid business dispute resolution

Faced with Records, business or trade disputes, Mulago Hospital Records Department needs fast access to records. These records can be electronic documents, web pages and e-mails messages. Providing access to these records on-line reduces the time required to respond to questions and result in quicker resolution of problems.

- To reduce long-term cost

While there are costs associated with implementing and maintaining electronic record keeping, The Electronic records and document Management system reduces or avoid costs for many

areas associated with paper filing, including the costs for storage space, materials and labor. In particular, electronic recordkeeping reduces the costs associated with the problem of misfiles that are common in paper files. Applying records management principles the study ensures that electronic records are kept for the appropriate period of time and provides context and content based retrieval mechanisms. Both of these factors reduce search times and increase the relevance of search results

- To help authenticity, reliability and access to information

With proper process and procedures, electronic recordkeeping can ensure security of critical records and control rights of users to access or modify records. The resulting integrity and security can be coordinated with existing security initiatives and/or standards. Not only is the reliability improved, the information resources of Mulago Hospital Records Department become more accessible (though only to authorized users) and are able to be shared. The result of this is better use of the information resource, less duplication of work and additional productivity improvements.

- To facilitate long- term management of digital records

Electronic record keeping has tools to overcome obsolescence of storage media, hardware, applications, and application-dependent data. Electronic recordkeeping schedules can be integrated with storage management systems to separate transient and vital records, allocating storage online, near line or offline. Electronic recordkeeping systems can also create the batching techniques needed for preservation and migration strategies.

- To automate Records census and production of other vital statistics therefore the accuracy will be guaranteed
- To provide sufficient storage space.

1.5 Significance of the study

It is anticipated that the outcome of this research will be useful in replicating new systems in all the Health services nationally and even in other countries with the similar environment in Africa. The study information will be available for use by Academicians in the Information communication technology (ICT) field, Information technology Experts, IT consultants, Medical Doctors, records managers, decision makers

To the Health sector, the Findings are expected to be useful in providing data or information about electronic record keeping and document management in the health sector and how electronic records can be handled very well when they are automated in the health services

The Findings will be useful in providing Information of associated opportunities and benefits of electronic record keeping in all Mulago Hospitalizations this information will highlight the benefits one can get when the information is well managed and can have access to it in a limited time.

The Findings will as well be used to facilitate long- term management of digital records Electronic recordkeeping has tools to overcome obsolescence of storage media, hardware, applications, and application-dependent data. Electronic recordkeeping schedules can be integrated with storage management systems to separate transient and vital records, allocating storage online, near line or offline. Electronic recordkeeping systems can also create the batching techniques needed for preservation and migration strategies

1.6 Scope of the study

The study was limited to the Records Department-Mulago hospital which is located in Kampala district, Mulago Hospital Records Department handles all the Hospital Records that are generated and its has the facility that stores all the Hospital

Mulago Hospital was chosen because it's a government Hospital which was started way back in the early 1920's and it handles a lot of records than any other Hospital in the country.

The hospital has the largest number of patients in the country that makes it the busiest and it generates a lot of electronic and paper records for these patients. The Hospital has a medical training school where they train medical doctors, nurses, midwives, surgeons, and dentists to mention. Mulago Hospital has so many departments and all generate records.

The study focuses on the records departments located in the Hospital; it will involve analyzing the records in all Hospital departments. it will explore How they are created, accessed, handled, classified, stored, and there security. It will also involve brainstorming sessions with records managers about electronic record keeping and the automation if the manual system in the Hospital.

CHAPTER TWO

2 LITERATURE REVIEW

2.1 Introduction

This Chapter Presents a review of Related Literature that has been taken on Electronic and Document management Record keeping procedures and their operations with the objective of revealing contributions, weaknesses and gaps. It analyses the existing literature about record keeping procedures and highlight information about electronic records and document management systems as applied in company's world wide and how they have been effective and how they have helped to solve company's problems. It's categorized under Hospital records, Therefore the literature review will be reviewed in this context:

2.2 Managing Hospital Archives

Laura Millar in *A Manual for Small Archives* (1988), Points out that electronic record keeping is the only way records can be safely stored, accessed and handled, she points out that once records have been automated they can easily be used in everyday work without any interference or getting lost, she points out that records when automated they have a tight security as they are protected by passwords and nobody can easily break through the system and gets away with the records.

Laura Millar in her book Archival Gold: Managing and Preserving Publishers' Records (1989) in this book she explains how publishers records can be managed and preserved, she talks about electronic record procedures as one of the best ways records can be secure and managed properly so an electronic record and document management system is highlighted as an option

for places with so many records.

Laura Miller in A Handbook for Records Management and College Archives in British Columbia (1989) observes that records management is the only tool for a Mulago

Hospitalization success, thus electronic records and document management systems are suitable in every Mulago Hospitalization.

Michael Cook and the staff of the International Records Management Trust in the book *Managing Archives (1995): A Procedures Manual*, define the procedures for managing records after they have been transferred from the records centre to the archival institution for permanent preservation. The archives staffs ensure records are received, processed according to archival standards, physically housed and protected and made available for public use.

Maxwell-Stewart, H., Sheppard, J. and Yeo G., Hospital Patient Case Records: A Guide to their Retention and Disposal. London, UK: Health Archives Group, 1996. Maxwell points out that Hospitals deal with the life and health of their patients. Good medical care relies on well-trained doctors and nurses and on high-quality facilities and equipment. Good medical care also relies on good record keeping. Without accurate, comprehensive up-to-date and accessible patient case notes, medical personnel may not offer the best treatment or may in fact misdiagnose a condition, which can have serious consequences. Associated records, such as X-rays, specimens, drug records and patient registers, must also be well cared for if the patient is to be protected. Good records care also ensures the hospital's administration runs smoothly: unneeded records are transferred or destroyed regularly; keeping storage areas clear and accessible; and key records can be found quickly, saving time and resources. Records also provide evidence of the hospital's accountability for its actions and they form a key source of data for medical research, statistical reports and health information systems.

It is still common in many hospitals to give each department total autonomy in the management of its records. Unfortunately, this decentralization of records care often leads to poorly designed filing systems, loss of information, premature destruction or unnecessary retention of records and ultimately to inefficiency and wasted resources. Above all, patient care will be adversely affected if correct records are not maintained or if records are inadequately managed or if there is no means of co-coordinating the care the same patient receives in different departments. A structured and effective records management programme, covering all departments and all records irrespective of media, should be the aim of every hospital.

General Editor, Michael roper and Managing Director Laura Millar, in Managing Hospital records, Produced by the International Records Management Trust 12 John Street London WC1N 2EB UK

Argue that *Managing Hospital Records* addresses the specific issues involved in managing clinical and non-clinical hospital records, indicating where particular approaches are needed to meet the specific requirements of a records service within a hospital environment. While *Managing Hospital Records* is primarily concerned with the records of general (or 'acute') hospitals, much of its content is also applicable to the management of records in other health care facilities, such as long-stay hospitals, mission hospitals, sanatoria, community clinics and local health centers.

"This module is written particularly for those already working in, or recently appointed to, hospital posts carrying managerial responsibility for records and also for managers in other sectors interested in hospital records issues. Activities are designed on the assumption that students are working in a hospital record-keeping environment or have access to hospital records. Those students who do not have access to hospital-related records may choose to adapt the activities to suit hypothetical situations" Laura Millar and Michael Roper state in there book *Managing Hospital records*.

Henry Kemoni, Kenya, 'Managing Medical Records in Kenya: A Case Study of the Moi National Referral and Teaching Hospital, Eldoret'

In Lesson 1 examines the context within which hospital records management operates. While many government agencies and private-sector institutions encounter similar records management concerns, hospitals also have to deal with the particular needs of the medical community: that is, with the needs of physicians, surgeons, nurses, medical social workers, physiotherapists and others involved in the care of patients in a hospital environment. In this lesson he examines the organizational structures of Records manager and clerks in Hospitals,

He states that if records are to be managed efficiently throughout their life, a structured record-keeping system must be in place in all parts of the hospital

He argues that The records department should have its own staff and accommodation. Its responsibilities for records care should be endorsed by senior management and documented in standing orders or similar hospital regulations. The major part of the work of the records service will be in dealing with patient case notes and with related series such as admission and discharge records. As explained in Lesson 2 case note files are created when new patients are registered, and thus it is appropriate for the records service to have responsibility for the registration of patients or, at the very least, a close working relationship with reception and registration staff. Within the records storage areas, by far the largest part of the available space is likely to be occupied by patient case notes,

Many hospitals have a medical records committee, which, if properly constituted, can provide strong support to the records manager. Typically, the medical records committee will be responsible for approving the design and format of health records and forms, reviewing the quality of information in the records, dealing with matters relating to the storage and retention of records and monitoring their retrieval rate. The suggested membership of the medical records committee is a senior hospital

manager, representatives from the various clinical services, a representative from the nursing staff and the records manager.

General Editor, Michael roper and Managing Director Laura Millar, in managing public sector records, Produced by the International Records Management Trust 12 John Street London WC1N 2EB UK in lesson two they argue that Like any organization, a health care service has a wide range of information requirements. Records management meets a substantial part of these, but others are met by the collection and analysis of data and the production of statistics or by access to externally generated information sources whether in printed or electronic form. Facilities for the provision of published information are normally provided in libraries, but in many health care institutions the management of data and statistics is considered part of the 'medical records' function. These tasks are ideally the responsibility of the statistician and the data manager: records management and statistical analysis are different skills. Nevertheless there is a strong case for locating the records department within a wider information division responsible for all aspects of information management, including library and data management services.

Kimberly Barata and Piers Cain (1999), Managing electronic records, © International Records Management Trust, 1999, Produced by the International Records Management Trust 12 John Street London WC1N 2EB UK

Kimberly argues that Because of the rapid spread of information technology, some experts have been predicting that the 'paperless office' will soon become commonplace and that advanced information systems will provide instantaneous access to information through computers, telecommunications and optical disk systems. In reality, few automated systems have eliminated the use of 'hard copy' documents (that is, documents printed on paper from a computer application), and in many cases the use of computers has actually accelerated the creation of paper records.

The contents and functions of electronic and paper records are usually closely related. Data may be

extracted from a database to produce summary reports on paper; printouts of reports may be produced as a database is updated; and word-processed correspondence stored on a diskette may also exist in an agency's paper files. As a result, paper and electronic records management must be closely co-ordinated. A comprehensive records management programme must focus first on analysis of the information in records and then on the medium on which the information is stored.

He argues that in an electronic environment, it is necessary to treat content and medium separately. Records managers must participate in the early planning and design stages of computerized systems or risk losing control of electronic records, either because the records will not be kept in the first place or because they will be irretrievable or unreadable if they are kept. These changes are forcing records and archives professionals to re-examine their traditional roles and to reconsider their approach to the creation, management and use of records. Many professionals now recognize the need to manage electronic records throughout their life cycle, following a continuum of care.

However, the changing attitude to records management is not confined to the management of electronic records. The new working environment is also causing records professionals to rethink their approach to paper records. Records and archives staff must become increasingly involved with the process of records creation, use and maintenance; they cannot wait for creators to finish using current records and pass them along for storage and preservation because the paper records and the electronic records are usually part of a single system

Records professionals recognize that paper and electronic records need to be managed as part of a continuum of care.

If records are to survive and be useful in supporting the functions of governments and preserving a cultural record of the past, the concept of passive reception will have to change to one of active involvement at the point of creation. Records professionals will have to be equipped with the skills required to contribute effectively to an electronic working environment. Records management will

require greater discipline and greater creativity than in the past.

Barrows, RC. And Clayton, Computer Patient Record Institute, *Security Features for Computer-based Patient Record Systems*. Schaumburg, ILL: CPRI, 1996

Barrows argues that Electronic records management provides the catalyst for records managers and archivists to become involved in the design of information technology systems to ensure that records are controlled from the beginning of the records life cycle. Controls must be applied from the outset if the records are to be protected as reliable sources of information over time. Moreover, because the control of electronic records is dependent upon technology, records professionals must become more aware of how different technologies work and how they affect records and record keeping.

Electronic records must be controlled from the point of creation

From the first mainframe computers in the 1940s and 1950s to the introduction of the personal computer (PC) in the 1980s and networked computers in the 1990s, the evolution of information technology has been dramatic. It is important, however, to focus on the changing nature of the applications supported by the technology rather than the technology itself.

Michael Cook and Andrew Griffin, Managing Records In Records Centers,(1999), International Records Management Trust, 1999.

Michael In lesson two states that the records centre is not simply a storage area but the base for an information service.

Materials held in the records centre must be available for use. The records and archives institution should take active steps to encourage agencies within the organization to use records during their decision-making processes or in any work involved in administration. The records centre should be designed to make the procedure for retrieving, issuing or consulting records as easy as possible.

Consignments of records are also regularly moved out of the records centre, under the provisions of the disposal schedules. Records moved out comprise records transferred to the appropriate branch of the archival repository and records ready for disposal or destruction under controlled conditions.

The records centre should have facilities to allow users to attend at the records centre and examine documents under certain conditions. For example, there should be a controlled and supervised search room. There should also be suitable arrangements for visitors to reach the records centre, including a car park with ample space for the records center's own official vehicles, staff members' own cars and visitor's cars.

He points out that the records centre should also be able to control the issue and replacement of records that are on loan to agencies. To carry out these duties, records centre staff should have offices where records of transfer, issue, return or consultation of records are recorded and from which all management functions can be exercised. These functions involve the movement of staff as well as of materials, and so various requirements should be considered when determining what kind and amount of transport is required.

Department of Health and Human Services "Electronic Signatures: Electronic Records." *Federal Register* 59, no. 168 (31 August 1994): 45160.

(Summary taken from article)

The Food and Drug Administration (FDA) is proposing regulations that would, under certain circumstances, permit the agency to accept electronic signatures, and handwritten signatures executed to electronic records as generally equivalent to paper records and handwritten signatures executed on paper. These proposed regulations would apply to records when submitted in electronic forms that are called for in Title 21 of the Code of Federal Regulations (CFR). The use of electronic forms of record keeping and submissions to FDA remains voluntary. This proposed rule is a follow-up to the agency's July 21, 1992, advance notice of proposed rulemaking (ANPRM). The intended

effect of this proposed rule is to permit use of electronic technologies in a manner that is consistent with the FDA's overall mission and that preserves the integrity of the agency's enforcement activities. This proposed rule is also intended to assist in achieving the objectives of the Vice President's National Performance Review.

Information Exchange Steering Committee. *Management of Electronic Documents in the Australia Public Service: A Report Prepared by the IESC's Electronic Data Management Sub-Committee*, Australian Government Publishing Service, Canberra, Australia, 1993.

This report is a set of guidelines for the effective management of electronic records. It describes "critical success factors:" 1) "agency commitment to cost-effective electronic information management for all platforms," 2) "a team of staff with the right mix of skills available to do the task," 3) "clearly defined and consistent agency-wide policies and procedures in place for staff to follow," 4) "easy access to agency standard information management tools," and 5) "security and privacy requirements incorporated into information management policies and procedures to ensure best practice." The remainder of the report describes the values of such records and basic management principles. The report is a good description of efforts by Australians to administer such records and it contains useful work-flow diagrams and other illustrations which will assist individuals and organizations considering the same issues. Perhaps of greatest value is its description of the "essential features of a corporate electronic document."

McConchie, Brenda. "Electronic Document Management and the Work of the IESC: Issues and Progress." *Managing Electronic Records: Papers from a Workshop on Managing Electronic Records of Archival Value*, eds. Dagmar Parer, and Ron Terry, 96-101. Sydney, New South Wales, Australia, 30 October 1992. Canberra, Australia: Australian Council of Archivists Inc. and Australian Society of Archivists Inc., April 1993.

The author reviews the work of the Electronic Data Management Subcommittee of the Information Exchange Steering Committee. She also discusses guidelines based on three principles: information

is "managed according to its use within the agency," "its life cycle," and "its value to the agency."
[99].

National Computer Systems Laboratory, and National Institute of Standards and Technology (NIST) *Framework and Policy Recommendations for the Exchange and Preservation of Electronic Records*, by Margaret Law, and Rosen Bruce K. Washington, DC, March 1989.

(Abstract taken from Executive Summary)

A major portion of this report discusses the internal electronic information management requirements that NARA must satisfy if it is to prevent the loss of its electronic information holdings. This report also points out that much of the descriptive information NARA must manage, must be provided to NARA from the originating agencies in a manner consistent with the policies that must be established by NARA. Also discussed is the additional complication that, constant changes in computer and storage technology will require that NARA constantly monitor, and be prepared to change its methods of storing, maintaining, and retrieving electronic record holdings. Finally, throughout this report various standards that now exist, or are expected to exist, are recommended for use by NARA in seeking solutions to the problems of receiving, storing, maintaining and retrieving electronic records. As an example of the application of these standards, a prototype software system for the exchange of documents produced under the different work processor systems was also developed as part of this project.

New York State Archives and Records Administration - Center for Electronic Records. *Accessioning Electronic Records: An Interim Procedural Manual and Guidelines* Albany, NY: New York State Archives and Records Administration, June 1992.

(Abstract taken from paper)

This manual contains procedural and related guidelines for the accessioning of electronic records by the State Archives and Records Administration (SARA). The manual is termed "interim" because it mostly applies to statistical data files. Accessioning practices for statistical data files are fairly

standard in archival institutions. The procedures and guidelines in this manual are modeled after procedures used for statistical files by the National Archives and Records Administration, National Archives of Canada, Inter-University Consortium for Political and Social Research (ICPSR), and various university data archives. Accessioning procedures are not well established for textual files, software dependent databases, geographic information systems, and other electronic records produced by emerging technologies.

Parer, Dagmar. "Australian Archives -- Preserve Your Valuable Electronic Records." *Electronic Records Management Program Strategies*, 30-37. Ed. Margaret Hedstrom Archives and Museum Informatics Technical Report No. 18, Pittsburgh, PA: Archives and Museum Informatics, 1993. Description of the Australian Archives' electronic records policy, consisting of four principles: appraisal of electronic records, monitoring and management over time, compliance with disposal authorities, and access over time.

Smithsonian Institution - Office of Information Resource Management. *Data Administration Standards Manual* Washington, DC: Smithsonian Institution, October 1986.

(Abstract taken from introduction)

The purpose of the Data Administration (DA) Standards Manual is to document the function of Data Administration within the Smithsonian Institution. These standards address every aspect of Data Administration, its interdependence on other disciplines, and its interactions with various organizational functions. The objectives of this manual are: 1) to provide a conceptual framework for the Data Administration function, 2) to outline the responsibilities of Data Administration and provide guidelines for its interaction with other functions, 3) to document standards for data control and management throughout the Smithsonian and provide formal measures to assure standards compliance, and 4) to describe the tools used by data administration.

Speer, James Beryl. *Functional File Classification: A Plan of Filing Correspondence and Other Papers According to the Functions, Tasks, or Activities of the Business.* Missoula, MT: Montana

State University, First Mimeographed Edition - August 1940.

This file manual, based on the functional classification of files, was used by the offices of Montana State University as a guide to classifying files at the university.

Sullivan, Dave. "Investigation into the Feasibility of Implementing the Guidelines on the Management of Electronic Records." *Unpublished paper. Electronic Records Project Conference*, Canberra, Australia, 22 May 1992. Canberra, Australia: Australian Archives, Dept. of Administrative Services, 22 May 1992.

The paper discusses the draft Guidelines for the Management of Electronic Records proposed by the Australian Archives. Specifically, it concentrates on Guidelines 3 and 6 and considers the Data Management aspects of the guidelines. Sullivan discusses concerns over both the existing arrangements and the proposed guidelines for long-term storage of information in data bases and user access to that data, as well as making recommendations on procedures that should be implemented to ensure the future access to current information.

United States Office of Management and Budget -- Executive Office of the President. "Management of Federal Information Resources." *Federal Register* (29 April 1992)

(Summary provided).

The Office of Management and Budget is revising Circular No. A-130, Management of Federal Information Resources. This notice proposes revisions concerning information management policy, including policies relating to information dissemination, records management, and cooperation with State and local governments.

Zazyczny, Joseph L. Management Directive: Electronic Records Management, Archival and Records Management Services, Harrisburg, PA, 15 November 1994.

(Abstract taken from Directive's Purpose and Objectives)

This Directive is to establish and clarify state records management policy with respect to the creation, use, maintenance, scheduling and disposition of electronic records. Its objectives are to: 1)

ensure the efficient administration and management of electronic records and the preservation of those having long term and historical value; 2) identify and protect vital electronic records; and 3) ensure the accessibility of electronically-stored information in conformance with agency needs and records retention and disposition schedules.

2.3 Research questions

The study was guided by the following research questions;

- What are the available opportunities and prospects in the course of establishing and operating an Electronic record keeping procedure and how optimally can it be taken advantage of?
- Why should Health Services advocate for electronic record keeping procedures?
- What are the constraints faced in solving the highlighted problem?
- Have the strategies initiated by the state and aid agencies been successful in establishing Electronic Record Keeping Procedures.

CHAPTER THREE

3 METHODOLOGY

In this chapter a description of how the research was carried out is made, this includes the research design, area of study, sampling procedure, data collection and finally data processing and analysis. An attempt was made to give reasons behind the choices of tools and methodology

3.1 Research Design

The research design was a case study, because it was meant to capture information from a specific study or scene. Both qualitative and quantitative research methods were used. The qualitative methods was used because the researcher wanted to reveal real knowledge necessary in providing a more profound understanding and analysis of all related aspects, since qualitative methods are information driven, they provided a more holistic picture and analysis of the establishment and operations of an electronic record keeping procedure.

The qualitative methods that include the FDGS and in depth interviews were used, key informant interviews were conducted for the records managers, Company Executives, Company representatives, IT specialists and other managers in Mulago Hospital

3.2 Area of Study

The study was conducted in Mulago Hospital-Records Department; Mulago Hospital is situated in Kampala city the political and commercial capital of Uganda which is located in the central division. Kampala city is located on the northern shores of Lake Victoria, Africa's largest and the world's second largest fresh water body (GTZ Urban planning Assistance, 1993 in Byendaimira, 1995, 66)

Kampala city was the area of study because of the political/administrative capital, it is the home of the Ministry of Health which runs Mulago Hospital, Kampala city Houses various health services that experience the same problem, there over 50 health centers in Kampala alone and these have problems of records Management thus this area was chosen because of the presence of all these health services.

3.3 Data Collection

3.3.1 Methods

Data for this method was collected using in-depth oral interviews, self administered questionnaires, and documentary review.

3.3.2 In-depth oral interview

The in-depth oral interviews that were personally conducted by the researcher covered 2 respondents, these included 1 records manager, 1 records clerk, these helped the researcher to know the current situation of the hospital records and how they are effectively managed.

3.3.3 Self-Administered Questionnaires

The questionnaire was administered to all the 2 respondents that is one official everyday in order to generate unbiased frequencies.

The questionnaire was designed to facilitate acquisition of more accurate data to complement that obtained through in-depth oral interviews.

3.3.4 Documentary Review

Secondary data was obtained through reading materials from resource centers of Mulago Hospital Records Department; existing literature about electronic record keeping solutions, literature about some software's designed for health services, and the World Wide Web were also good sources of information..

This method of data collection was advantageous in that it provided information on subjects/issues on which the researcher did not have physical access through collection of primary data. However, not all the required information could be obtained from these secondary sources.

3.4 Research procedure

The research instruments were designed with the guidance of supervisors and colleagues to ensure that all aspects relevant to the study are captured, prior to the preliminary visits by the researcher to Mulago Hospital records department.

An introductory letter was obtained from the Faculty of Social Sciences, Kampala international university, the purpose of the visits was to obtain permission, select respondents and secure their co-operation

Distributing the self administered questionnaires to the selected respondents followed.

Appointments with various respondents were also fixed at the time and venues of their choice and convenience. All interviews were conducted at the offices of the respondents and most appointments were honored. The interviews were conducted personally by the researcher with the help of the interview guide. At the Beginning of the interview, the purpose of the research was explained but the permission to tape record the proceedings was obtained. The purpose of

tape recording was to obtain detailed explanations, and to avoid misquoting. The interviews took on an average one hour, while the entire data collection procedure took four weeks.

The interview guide as an instrument of data collection was found desirable because it gave room for obtaining detailed data through probing and personal discussion about the study. This method also ensured that information is obtained in time and inaccurate data was avoided through probing.

The self-administered questionnaire on the other hand, had advantages of use of standardized wording which made comparison of respondents, answers easy and allowed respondents to consult other sources before filling in the questionnaire.

The information obtained from interviews was complemented with documentary reviews as mentioned above.

3.5 Data processing and analysis

Qualitative data obtained from the in-depth interviews was continually analyzed during data collection. Similarly, taped interviews were continually transcribed.

Three major themes identified were Records storage, records management procedures for the Hospital records and accessibility of records in case there is need of a particular file.

Thereafter, the data was manually analyzed using thematic/content analysis, as data was transcribed; the major themes were indicated in the left hand margin of the transcript.

A highlighter was used to isolate the outstanding quotations that were subsequently used in the presentation in the chapter 4 below.

Data analysis of the information from self-administered questionnaires was done using a statistical package for social scientists (SPSS) after being captured by EPI-INFO software. The

analysis was used to generate frequency distribution tables on the main aspects under the study. The analysis was done to provide answers to the stated objectives and hypothesis outlined in the previous sections of the report. Since the study was largely qualitative, the data presented only reinforces the views forwarded in the in-depth interviews with the respondents.

3.6 Limitations of the study

Some practical limitations were encountered during the course of the study.

The area of study is too big and quite new, Mulago Hospital Records department has so many records and on different floors of the building, each floor has a lot of records or files. So most of all the floors were not covered at the same time but emphasis was put on the main records department or facility which stores confidential records for the Hospital.

Another limitation was limited funds; this affected the sample size of the study, despite this. Careful purposeful selection was made for the qualitative data; this ensured that the findings were a representative body of knowledge.

Another important limitation was that of non-response, several ways were devised to secure co-operation from such respondents in vain. The possibility of interviewing other respondents from different record floors and offices failed because such respondents were considered the only officers charged with the kind of information the study was seeking. Fortunately, efforts required to obtain some of the required information from the public resource centers of the Hospital records department was fruitful. With such alternative measures, the study findings were complemented.

Related to the above, was the unavailability of some selected respondents during the period of data collection; some individuals that would have provided very important information on the

study were not available during the entire period of data collection. Even after the schedule period for data collection, several attempts were made to secure appointments or alternatively interview other officers but the efforts were futile. The reduction of the sample size from twenty to ten is attributed to such cases. However, other important resource persons identified during the course of the study were considered.

CHAPTER FOUR

4 FINDINGS AND RECOMMENDATIONS

This chapter is devoted to the presentation, analysis and, interpretation of the empirical data generated in the study. The findings were interpreted and discussed basing on the objectives of the study as stated in chapter one, in comparison with the literature review in chapter two. The results include analysis of secondary data reviewed.

This chapter presents the findings at Mulago Hospital Records Department and the constraints that the Records department faces and the way forward as far as automating of records at Mulago Hospital is concerned. This chapter highlights the recommendations for Mulago Hospital records department which must be put into consideration if the hospital records are to be managed effectively

4.1 Mulago Hospital Archives

4.1.1 Background

The Mulago Hospital Archives was created in the early 20's and forms a Section of the Information and Publications Division of the Research Department. Many departments at Mulago Hospital are attached to the records department.

Since its formation, the Archives has experienced a number of set-backs that have hampered its development and the maintenance of control and preservation of its record Holdings. These have included temporary closure of the Archives, the repacking of Records in sacks and a reduction in the size of its repository storage area

4.1.2 Current Situation

The Mulago Hospital Archives operates under a Board directive and has no formal, documented Archives policy. Its systems and procedures were developed without the benefit of archives and records management standards and do not conform to internationally Recognized best practice. In particular, there is inadequate documentation of the system and processes resulting in the lack of sufficient archival finding aids and mechanisms for the control and monitoring of the Archives' functions and activities.

The Archives has three professional staff in post, comprising 50% of the authorized establishment. Two of the unfilled positions are for archivists with duties relating to Electronic records. There is no support staff to undertake routine and basic administrative or archival repository tasks. The professional staff are graduates with academic qualifications in archives or related disciplines but they have limited experience in the management of archives and limited exposure to the management of electronic record keeping systems. In the absence of a Mulago Hospital records management policy and effective procedures relating to the appraisal, disposal and transfer of records from business units, the acquisition of records by the Archives is carried out on an ad hoc basis and is inadequately documented. Business units hold an estimated 15,000 semi- and non-current records. There being no records centre for intermediate records, both classes of records are kept together in the same storage area or facility. Similarly, within the Archives, both semi-current and archival records are stored in the same repository.

The Archives repository is located in a bad environment building and lacks adequate facilities for the processing and storage of records. The repository is currently full, resulting in the Archives having to halt records transfers. The system for intellectual and physical control of the records is minimal.

There is an accession list by record group but no descriptive finding aids or indexes to assist users in understanding and locating records. While the maintenance of selected records in the custody of the Archives provides for a basic level of protection, the physical environment of the repository and unsuitable nature of the record storage containers do little to enhance their preservation. There is no active preservation copying programme or paper conservation facility supporting the Archives. Use of the Archives is not governed by an access policy and is poorly documented.

Qualitative information on the use of records and statistics is not maintained. A sensitization programme, aimed at giving Mulago Hospital staff a better understanding of the role of the Archives, is being implemented but no programmes for vital records and disaster Planning based on the Archives and its holdings have been developed. Information technology in the Archives comprises desktop PCs running Microsoft standard office software and not even connected to the Mulago Hospital intranet. Much of the basic structure and facilities are in place but the Archives' procedures, processes and documentation require substantial revision and development if it is to Prepare for its functions and activities to be computerized.

4.1.3 Records classification

Records are classified thus:

- Private out – patient records.
- In patient records.
- Out patient records.
- Lab and X- ray records.

4.1.4 Record generation process

4.1.4.1 Conventional process

- Registration (patient details taken and Registration no issued)
- Examination (preliminary observation).
- Diagnostic therapeutic (e.g. lab-ray).
- Treatment (prescription)
- Results.

4.1.4.2 Emergency cases

In this case, the steps highlighted above may not be followed in the laid down sequence or some steps may be omitted.

4.1.4.3 Record formats

Most of the records are in paper form, however, some specialized departments provide / generate other record formats say X-ray films, slides (scans) etc.

4.1.4.4 Record holding / maintenance

In principal, each patient is supposed to have a single file in the database; however, specialized clinics maintain their own separate file for each patient they attend to and this record stands independent of that maintained in the central registry.

Due to cash constraints there has been a conceited effort to scale down stationary costs hence a situation where the on – repeat patients in the out- patient clinics may not be required to maintain a file. These details are captured through the use of a daily summary sheet maintained by the doctor.

4.1.4.5 Record numbering

The “in – patient” (IP) and “private out patient department” (POPD) maintain a “Terminal digit numbering” format while the out – patient (OP) maintain “Sequential numbering” format (the latter numbers close with each year).

4.1.4.6 Reports

The statistician currently develops reports based on the data / record information manually. Some important reports include:

(a) Index card:

This is a summary of the activities of hospital as far as patient care is concerned and is displayed in the following format: The index card contains the following information derived from the Medical records/files.

Hospital no	International code (ICD).	classification	sex	/ Age	Average length of stay	Results e.g. death.

Table 1: Hospital index card fields

(b) Bed state:

This is a daily report shoeing the number of patients in the record, this includes:

No (s) of patients admitted

No (s) of patients discharged.

No (s) deaths (with details of patient e.g. name) etc.

4.2 Mulago Hospital Archives- Constraints

In the recent past, the rapid growth of the patient turnover at Mulago has led to a significant increase in the records created, handled and maintained. This increase in records has grown at a rate of 50,000 files per year. This increases considering that the records handling and storage infrastructure has not grown at the same pace leading to the following:

- Lack of sufficient storage space hence the piling of records on the floor within the registries.
- Inability to preserve the condition of records hence compromising the integrity of the same.
- Inability to implement records security measures and audit practices
- Records census and production of other vital statistics is manual hence the accuracy cannot be guaranteed.
- The cluttered, dusty nature of the records in registries is not only an eye – sore but also exposes the record handling staff to health hazards.
- Lack of an archive leading to the loss of vital knowledge to hospital staff and other researchers.

This form of record keeping management does not meet the requirements for standardized, complete, accurate, reliable, accessible and durable evidence on Mulago's activities. Moreover such practices pose unacceptable risks to the capture and management of essential evidence. There is also the distinct possibility of large number of records being lost.

Often than not, officers charged with the responsibility of maintaining such diverse information system are referred to as “Chaos managers” considering that, they cannot efficiently provide their end – users with information in the correct version, context and format to facilitate work processes.

4.3 Details of key Problems faced

4.3.1 Storage Space

Storage space is major problem which is manifested in the presence of huge amounts of records in different stages of use and condition being dumped on the floors in record handling areas plus the stores. The archives consist of 2 40ft containers which do not provide convenient access to the archival material.



Figure 1: Records stores on the floor in huge piles

4.3.2 Security

Currently apart from manual entry restrictions, there occurs no intelligent system of enforcing records security. There is no system in place that can assign different security levels to people who have access to the record centers, everyone can enter any how and collect a file from the record center which lead to loss of so many patients file. An electronic records and Document management system should be in place which can assign security levels like Top secret, secret, staff in confidence, medical in confidence. These security levels can be helpful when records have been automated

4.3.3 Preservation



Figure 2: sample of the state of files piled

4.3.4 Tracking / sharing / collaboration

Most of the files at Mulago hospital Records department go missing and tracking where the record is and who is handling it is a very big problem, record registers and some patients files are borrowed from the Records department but there is no tack of those files or follow up for the files which is a potential hazard to the records department operations, thus there should be a system to maintain a log of the physical location of records and assist in the maintenance of records registers.

4.3.5 Retrieval

Searching for files at Mulago Hospital records department is a very big problem, patients files are difficult to be traced in case of any query, so many patients lose some copies of there birth certificates but searching or retrieving the certificates takes a lot of time as the hospital has so many records. Most of the depositories are full and make the searching of records a tedious affair.



Figure 3: Records in the storage facility

4.4 Summary of Recommendations and Benefits

4.4.1 Recommendations

An assessment was made of the findings arising from the study of the current status of The Mulago Hospital Archives, which also took into account the views expressed by Mulago Hospital departments. A number of key issues of concern were identified. These, together with appropriate recommendations for addressing them, are set out in detail. Two issues emerged that were not anticipated at the start of the Research, namely the management of records in the Hospital generally and the location of the Archives within the organizational structure. To effectively address these, it is recommended that a corporate records management policy be issued by the Board, and that the Archives be relocated to a newly created Records Management and Archives Department which would have policy and operational responsibility for records management and archives and report to the Managing Director of Mulago Hospital.

Recommendations are also made relating to the management framework, staffing capacity and functions of the Archives Section with a view to improving its operational effectiveness and preparing it for the implementation of an EDMS. The recommendations include:

- Formulation of an archives policy.
- Introduction of standards in support of best practice.
- Revision of procedures.
- Appointment of additional staff.
- Staff training.
- Establishment of a records centre.
- Documentation of processes and records.
- Upgrading repository storage.

In assessing the current status of the Archives in the context of introducing an Electronic records and Document Management system (ERDMS), the view was formed that computerization should go beyond the management of scanned (digitalized) archival documents. Accordingly, it is also recommended that the electronic system introduced to the Archives should comprise a computerized archives management system (CARMS) with digitalization of documents as a component.

4.4.2 Benefits

The benefits delivered by implementing the recommendations relating to corporate records management and organizational structure may be summarized as follows:

- Establishment of a formal regime for the management of Mulago Hospital records with strategic objectives that can be measured and monitored

- Delivery of quality records that are complete, accurate, reliable and useable and meet the legal, evidential and accountability requirements of the Hospital and its clients
- The alignment of records management with core business functions and MH Strategies, including those for information technology and security
- Ensuring the maximum return on the Bank's investment of resources in record keeping.
- The enhancement of records as an information asset and resource.
- Direct support for the Government's objective of good governance.
- Support for the objectives of capacity building and effective information management contained in the Hospital's five-year strategic plan for 2006/7 to 2010/12

The beneficial outcomes of recommendations specific to the Archives are:

- Enhancement of the management and performance of the archives function.
- Improvement in the quality of archival holdings and services, including: identification of records as archives
- control of and access to archives
- Preservation of records as archives.
- Readiness of the Archives Section for computerization.
- Development of a capacity for the management of electronic records as archives.

4.4.3 Next Steps

The steps outlined in this section constitute a high-level 'road map' to give effect to the recommendations set out in this document. It is considered that a detailed implementation plan falls

outside the context of this study. It is suggested that senior management should address the issues and recommendations relating to corporate records management and organizational structure contained in this document with a view to submitting a proposal to the Board of Directors for Endorsement and implementation. It is proposed that the Archives should undertake the following steps in order to prepare specifically for the implementation of a computerized archives management system:

- Development of an archives policy framework.
- Allocation of priorities to tasks enumerated at section 10.0.
- Preparation of an action plan.
- Re-allocation of existing Archives resources.
- Acquisition of additional resources.

Strategies for use in implementing the action plan may include any one or more of the

Following:

- The creation of an Archives task force using temporary staff working under the supervision of an experienced archivist.
- Practical training delivered by an external instructor.
- The introduction and application of standards to the development of new record control systems and procedures.
- The use of external experts in a consultancy and technical assistance role.

It is envisaged that the steps outlined above will form the basis of the Archives' Work

Plan for the next years as planned for

4.5 Mulago Hospital – Organizational structure

MEDICAL RECORDS DEPARTMENT: ORGANISATIONAL STRUCTURE AND STAFF DISTRIBUTION

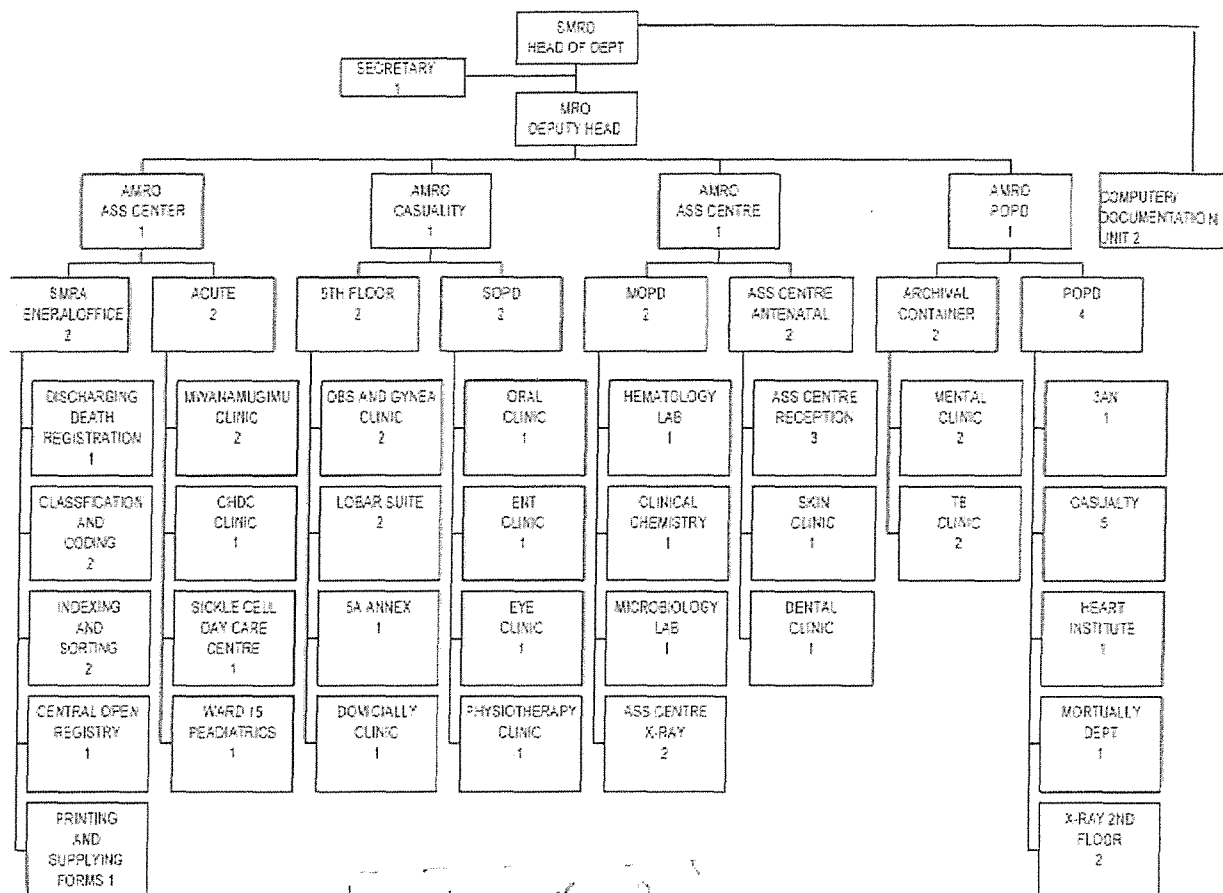


Figure 4: Mulago Hospital Organizational Structure

4.6 Mulago Hospital Archives – Functions

This section describes the current situation regarding the archival functions of the Archives.

Acquisition

4.6.1 Appraisal and Disposal

Records appraisal is undertaken on an ad hoc basis. There is no regular programme of appraisal. A records creating business unit may request Archives staff to review records for retention or destruction in consultation with staff of the business unit. Where records are transferred directly to the Archives, they are appraised by the Archives alone.

Appraisal criteria – continuing administrative, fiscal and legal values and informational and historical values – are broadly defined but not effectively related to the functions and activities of Mulago Hospital.

Disposal and retention guidelines were issued by some Departments some month's way back. However, some business units do not appear either to be aware of these guidelines or to apply them. The record descriptions contained in the guidelines are sometimes imprecise: 'routine files and papers' and 'routine correspondence'. Some are also contradictory: for example, 'memos' entered twice with differing retention periods of one year and three years; and 'training materials', also mentioned twice with retention periods of 'five years' and 'six years after training ceases'.

Records that are appraised as unwanted are placed in canvas bags and the bags' contents listed. The lists are forwarded to the Internal Audit Department for consideration and authorization by the Document Destruction Committee (DDC) prior to their physical destruction. Originally, the Archives was a member of the Committee but now no longer participates in its activities.

Records may also be forwarded directly to the DDC by business units for a decision on destruction without being referred to the Archives. It is possible, in this situation, for records to be destroyed that should be retained as archives.

4.6.2 Transfers

The Archives Section takes a passive role in respect of transfers, responding to requests from business units rather than initiating action or transfers being triggered by an authorized disposal/retention schedule. Some departments usually propose a transfer when there is a shortage of space or a storage problem arises in the relevant office area.

There is no formal process for the transfer of records to the Archives. Transfers are documented by memo with an attached list. The Archives Section has forms but they are not used by the business units and are used inconsistently by the Archives Section itself. The transfer lists are filed by record group and the file folders kept in alphabetical code order.

During the transfer process, records to be retained for limited periods and archival records are not distinguished but may be transferred together.

No private records are received by the Archives. Its holdings comprise official records of Mulago Hospital only. Of these, only file records are acquired. Records in other formats and media have not been transferred: for example, video tape recordings held by the Public Relations Department.

4.6.3 Accessioning

An accession register was established some years ago to record the file title, patient's name, diagnosis, file number, date range and sequential item number under record group for records received by the Archives. Use of this record appears to have been discontinued.

Reflecting the way in which transfers are frequently made, no distinction is made between semi-current records and archives in the accession record.

The entries for each record group comprise: a running entry number; file title; patients name, file number; date range; retention period (not used); archive record number and box number (these are entered in the 'remarks' column).

During the accessioning process, records may be placed in the storage boxes in random order, disregarding the archival principle of original order. A database file titled 'Boxes' lists the box numbers and the unique archive record numbers by record group as a means of identifying the location of individual record items.

4.6.4 Storage Records

There are approximately 5,500 processed record items in the custody of the Archives and an unknown quantity of semi-current records and archival material stored in the offices of the various departments, estimated to be around 15,000 items.

In the Archives, semi-current and archival records are boxed together and stored in same repository. This makes it difficult to apply disposal decisions to particular classes of semi-current records as well as to retrieve them for reference.

The records are stored in boxes on fixed, non-adjustable metal shelving. The boxes are of a larger than standard size (approx 40x40x50 cm) and, when filled, too heavy to be readily removed from shelving. In addition, a significant amount of shelf space is wasted.

The box labels contain details of the record group code, box number and archive record numbers of the individual record item. However, the locations of boxes in the repository are not recorded.

The original location index is inactive, its use having ceased after the Archives was compelled to give up two thirds of the original repository area and obliged to re-bag many of the records. Accordingly, finding and retrieving records from the repository is both uncertain and time consuming.

Owing to the lack of shelving space, boxed and bagged records are also stored on the floor. This increases the risk of damage to records as well as adding to the inefficiency of repository operations. Unprocessed records are also held in bags in the repository.

The Archives Section is currently unable to accept further transfers owing to the lack of sufficient storage space in the repository.

4.6.5 Repository

The records repository is used for both storage and processing of records. However, the space available for sorting, cleaning and processing records is inadequate, being limited to the top of a single desk.

The records center is secure against unauthorized entry and keys to the single door are controlled by the Archives. It was noted that a large quantity of old box-files are stored outside the entrance door. These constitute a potential fire hazard.

The repository is equipped with fluorescent lighting which, owing to its high level of ultra violet, can be damaging to records. The repository isn't air-conditioned, although lacking in temperature and humidity controls, and the system does not operate on a 24 hour basis.

Among the options under consideration with a view to improving the repository accommodation are extending the storage space within the existing building and relocating to another site.

4.6.6 Control

Arrangement and Description

Records in the custody of the Archives are arranged by record group only. Record series relating to particular functions and activities are not identified or documented.

The accession register contains details of the original file number, patient's names and title and the date range of contents of each record item. An 'abstract' providing a brief note on the record creating agency is appended at the end of the listing for each record group. There are no other descriptive finding aids or indexes to assist in understanding and identifying archival records for archival management or research purposes.

There is no master list of authorized terms (archival authority record) or classification scheme relating archives to functions to support the development of descriptive finding aids.

4.6.7 Preservation

The current storage arrangements are not conducive to long-term preservation of archival materials. Records packed into the over-large storage boxes or storage bags are subject to further wear and tear, and in the present repository environment the records are highly vulnerable to risks from fire, water damage and atmospheric pollution.

There is no facility or budget for a paper conservation programme that would usefully support and complement the use of document scanning.

4.6.8 Access

Access to the Archives is presently arranged on an ad hoc basis. There is no access policy or guidelines governing Mulago Hospital and public use of the records.

Research inquiries and requests for access are referred from, and responses relayed through, the Director of the Research/Records Department. There is no direct interaction between users and the Archives, apart from when individuals visit to consult records.

Research inquiries are recorded on file, a separate file being raised for each request for information. A research file series is maintained but not indexed making future reference use of

the files less effective.

There is a reading room facility for researchers although this is under-used as few genuine researchers visit the Archives. The opinion was expressed that most users expect the archivists to locate the information required. The Archives does not systematically record the issue and return of records from the repository. Occasionally, notes of file and box number are made but not retained. Use of a particular record item may be entered in the 'remarks' column in the accession record database.

No record is kept of the more frequently accessed records with a view to identifying categories of records for future scanning and preservation copying. The lack of statistics of records usage was also noted.

Vital Records

To date, no vital records programme has been developed by the Archives Section. In view of the potential risks and threats to the records and information held by the Mulago Hospital should be given to including the Archives' control records and selected archival records in a vital records project.

CHAPTER FIVE

5 SUMMARY, REQUIREMENTS ANALYSIS AND CONCLUSION

5.1 Summary

Throughout the research, it is seen that Mulago Hospital Records Department has been lacking Electronic Record keeping Procedures which could help it manage records and give security to their records.

However, measures have been laid out which can lead to the setting up of effective electronic record keeping procedures, which will be able to manage records in all aspects and keep security to data being entered. The following can be achieved once the recommendations have been considered;

- Increased responsiveness to the management
- Reduced time in tracking and recording information
- Matched of incoming and outgoing correspondence
- More efficient searching resulting in less time spent finding information
- Savings in time and money
- Increased competitiveness and viability
- Saved space storage for physical records
- Deliver services in a consistent and equitable manner,
- Support and document policy formation and managerial decision making,
- Provide consistency, continuity and productivity in management and administration,
- Facilitate the effective performance of activities throughout the institute

- Meet legislative and regulatory requirements including archival, audit and oversight activities,
- Provide protection and support litigation including the management risks associated with the existence of, or lack of, evidence of the institute activity.
- Support and document current and future research and development activities, developments and achievements, as well as historical research,
- Maintain corporate, personal or collective memory

5.2 Requirements of the Electronic Records and Document Management system

From the information collected using the research methodology, the following are the requirements of the new Electronic Records and Document Management system in order for it to meet all the user requirements identified.

The Electronic Records and Document Management system selected is expected to cater for all procedures of records management and integrate all modules to produce better quality outputs. In other words it satisfies the Institutes needs in the following aspects.

5.3 Network Bandwidth

As a multi-tiered Client/Server application, the software relies on adequate network resources to perform.

The minimum effective network bandwidth between this Workgroup Server and the selected RDBMS Server is

- 64 KBps when implemented with a third-party RDBMS
- 10 MBps when implemented with the Microsoft JET database

- The minimum effective network bandwidth between a Client and a Workgroup Server is 10 MBps

Attempts to run the system across a network of narrower bandwidth or on a heavily utilized connection may lead to impaired performance.

5.4 Hardware requirements

The system is a 32-bit Microsoft Windows application.

It requires the Hardware and Operating System components detailed in the following sections to operate and at minimal expenses for the institute.

5.5 System Client

The system client workstation software requires an IBM PC compatible computer with:

Minimum

- Intel Pentium II class processor (300MHz) – (or equivalent)
- 128 MB of RAM
- SVGA Monitor (1024 x 768)
- 50MB of Hard Drive Space (Executables and working space)
- Microsoft Windows variants (including NT Workstation 4.0 + SP6 (*with Active Desktop installed from IE4 which installs Shell32.dll version 4.72*), Windows 2000 + SP2 Professional or Windows XP Professional)
- Microsoft Internet Explorer 5.5 + SP2.

5.6 IMS Workgroup Server

The system workgroup server software requires an IBM PC compatible computer with:

Minimum

- Intel Pentium II class processor (500MHz) – (or equivalent)
- 256 MB of RAM
- 50MB of Hard Drive Space (Executables and working space)
- Object Caching space required is dependent on implementation
- Microsoft Windows variants (including NT 4.0 Server + SP6, Windows 2000 Server + SP2, Windows 2003 Server)
- Microsoft Internet Explorer 5.5 + SP2.

The system should also be able to operate on the various operating systems currently in use in the ministry like Windows 9X, XP, NT, ME, and Linux. It should also be able to accommodate different operating systems in case of new installations of different operating systems.

5.7 Typical requirements for the information management System

- Paper documents or documents electronically transmitted from elsewhere
- Storage and indexing at the document level
- Search and retrieval at the document level
- Access management and security control
- Off-line archiving for semi-active or inactive documents
- Version control

- Audit trails on access and changes to the document
- Document profiles (information about the document)
- Integration with document image processing and workflow systems.

5.8 Electronic Document Stores - Sizing Requirements

The physical space required to store Electronic Documents (*for example, word processing files, E-Mail messages, spreadsheets, etc.*) in your Document Stores is dependent on the amount of Electronic Documents stored in the dataset

5.9 Human Resource Requirement

Before the system is installed, there is a need to have some human resource to run it. In this case, this service may be out sourced to the Organization/ company to use the system.

Records manager:

This one participates in the early planning and design stages of computerized systems.

Data Entry Clerks:

A specialized data entry clerk, which consists of a minimum of three, typically performs modern data entry of Patients.

5.10 System performance

The system provides efficient and reliable data manipulation and processing. It should be able to accept data inputs from the users and output expected data on request.

5.11 Security

The system is built on an improved architecture that employs servers to distribute logic and data. This architecture introduces a much improved security model whereby the possibility of access to data resources from outside this system is constrained only by the capabilities and configuration of the host operating system security.

The system separates the client user from the data servers by a multiple tier configuration:

Client connects using DCOM to the Workgroup Server that connects to the (Synchronization) Server (and additionally Database and Document Store Servers). Domain permissions (NT) are used to deny direct access to computers and data.

5.12 Security categories

The standard hierarchy of levels is:

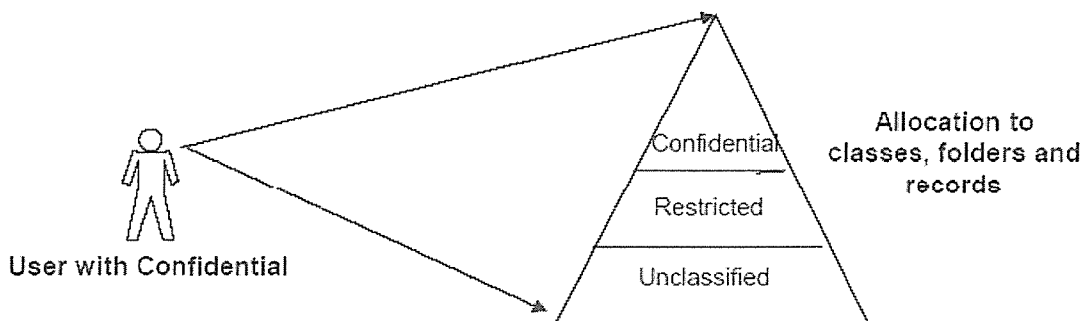
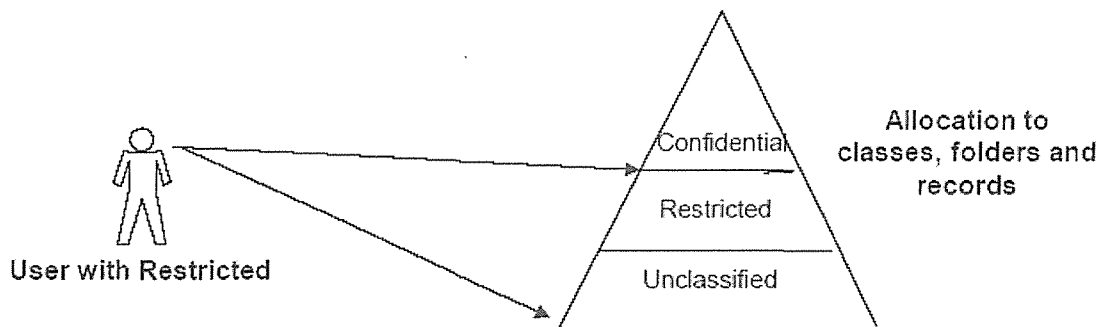
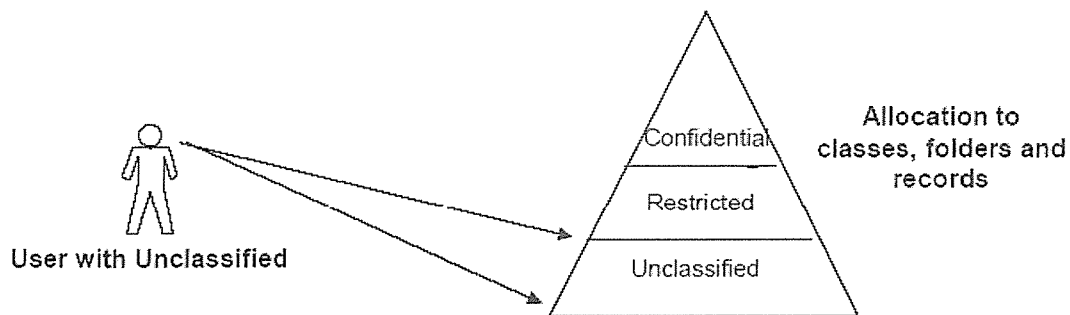
- Top Secret (highest level)
- Secret
- Confidential
- Restricted
- Unclassified (lowest level)

Any object can have only one security category marking at any one time; but the one which applies may change over time.

The majority of records are allocated the lowest level – Unclassified – and relatively few are allocated the highest level. A user to whom the highest level is allocated has the greatest breadth of access permissions. For example:

⇒ A user allocated a security category of Confidential has access (unless other controls operate) to records marked as Confidential, Restricted and Unclassified classes, folders and records

⇒ A user allocated a security category of Unclassified has access only to classes, folders and records marked as Unclassified (unless other controls operate).



5.13 Descriptors

A descriptor acts as a qualifier on a hierarchical security category, in order to limit access. In principle, a descriptor such as Commercial in Confidence implies that the item should only be accessed by users who have the rights to see information so marked. Descriptors are used in conjunction with hierarchical levels other than the lowest: for example, Restricted: Commercial in Confidence; Restricted: Policy; Restricted: Staff

5.14 Conclusion

Conservative estimates indicate that each office worker spends over 20% of their time looking for information. The deployment of an electronic recordkeeping solution will significantly improve retrieval times and will provide Mulago Hospital with estimated savings of 10% per employee.

In addition the deployment of the system will enable Mulago Hospital to comply with its legal recordkeeping requirements, and will protect the company from costly discovery processes associated with litigation. The Hospital will also reduce the costs associated with the storage (and retrieval from storage) of electronic records that currently get converted to paper.

The success of the implementation of an electronic recordkeeping system will involve high level support of Mulago Hospital's senior management team. This is particularly important with regard to managing business process changes and retraining initiatives involved in the adoption of an electronic recordkeeping solution.

In this research, a lot of achievements have been made when designing an electronic record keeping procedure; Records in Mulago hospital contain information that is a valuable resource and an important asset. The electronic Record keeping procedures primary objective is to achieve a systematic approach to the management of these records, which is essential for the institute to

protect and preserve records as evidence of actions as well as provide for efficient dissemination of information to stakeholders.

The end result is a best practice mix of technology, standards and practices would result in the efficient collection, analysis and delivery of information about business activities that can support subsequent activities and business decisions, as well as ensuring accountability to present and future stakeholders.

6 APPENDIX A

6.1 Mulago hospital Record types

CHILD HEALTH CARD

Child's Name: _____ Date of Birth: _____ Sex: _____

Weight: _____ Height: _____

Vaccination: _____

Please copy this card every time you bring your child for a routine check-up.

Figure 5: Child health card

MORTUARY IDENTIFICATION TAG

NAME: _____ TRIBE: _____

SEX: _____ I.P. NO.: _____ WARD: _____

BED NO.: _____ DATE DIED: _____ TIME: _____ RELIGION: _____

NEXT OF KIN: _____

ADDRESS L.C. I: _____ L.C. II: _____ L.C. III: _____

SIGNATURE OF NURSE: _____

Figure 6: Mortuary identification tag

MULAGO HOSPITAL OUT-PATIENTS CLINIC

Name: _____ Sex: _____ Age: _____ Tribe: _____

Address: _____ Date: _____

Diagnosis: _____

Mulago Hospital Out-Patients Clinic

Figure 7: Mulago Hospital out-patients clinic

LABORATORY REQUEST

Name: _____ Sex: _____ Age: _____ Registration No.: _____

Hospital: _____ Clinician: _____ Ward: _____ Bed: _____

Material: _____ Time: _____ Date: _____

Examination required: _____

Clinical notes: _____

Therapy: _____

Order A: _____ B: _____ C: _____ D: _____

Required by: _____ Name of Medical Officer (Block letters): _____

Address (Payee): _____

Received in: _____ Laboratory: _____ Time: _____ Date: _____ Lab No.: _____ P.T.O.: _____

Figure 8: Laboratory Request form

[illegible]

Figure 10: Histological Request Form

MULAGO HOSPITAL

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