

A Computerized Patient's Database Management System

¹IBRAHIM ABDULAI SAWANEH, ²ALBERT KAMARA,
³JOSHUA HAMID KOROMA³

Institute of Advanced Management and Technology (Affiliate to Njala University) Freetown- Sierra Leone

Author's Email Address: ciddiisawaneh@yahoo.com, akamara133@gmail.com, joshuahamidoe@yahoo.com

Abstract: Healthcare in Sierra Leone faces major dilemma when it comes to recording keeping with high demand for medical treatment and services. The medical records must appropriately have all of the patients' medical history. Healthcare professionals should always find a way to maintain the physiological parameters that can be referenced when the need arises as it can be used for several purposes. This study on patient's database management system is design to transform the manual way of searching, sorting, keeping and accessing patient medical information (files) into electronic medical record (EMR) thereby eliminating the traditional system. Existing platforms (manual systems) have been critically examined and hence a computer based system is essential for optimal result. The computer-based platform produces patient's records that enhances medical practioner's to constantly monitor their patients daily in and out of the hospital. The research looks for a more reliable and efficient scheme via computer technology to process patient health record ensuring proficient outcome that is cost-effective, save time and speed-up treatment. The research proposed patient database as an alternative solution to the growing world population especially third world nations.

The system will serves as a communication tool thereby easing an efficient transfer of patient medical data to healthcare professionals for effective supervision within and outside the hospital. Furthermore, it also accelerates the transfer of patient healthcare data to healthcare medical servers or individual such as insurance company or employer. Efficient storage of medical records renders accuracy diagnosis that enhances reliable and detail prescriptions which can be referenced as it is needed.

Keywords: Data; Database; Patient; Hospital; Medical Record; Electronic Medical Record.

1. INTRODUCTION

The advancement in innovative medical technology and global warming pose health hazards in most nations around the globe especially developing countries. The traditional platform cannot no longer handle the mass medical data generated by the increasing world population. A platform that heavily relied on traditional system where medical records kept in files and cabinets have become obsolete. A system is proposed to eliminate the conventional system (manual system) with electronic platform. One of such replacement can be done in the area of patient's database management system within a hospital environment. Developing patient database management system software essentially benefit the hospital management for easy access to a more secure system.

Patients recording management is an integral component in modern day healthcare management system. If proper records are kept in secure and safe place within the hospital helps healthcare professionals compare and contrast certain illnesses based on certain features. It can also be used for research purposes if guaranteed of security and privacy issues. The patient's records kept include patient data, which helps to maintain patient's medical records. The medical records must be accurate, efficient and correct that reflect the patient's medical history. Medical professionals maintain impeccable records as it serves numerous purposes.

Health care in Sierra Leone as in many other countries is confronted with growing demand for medical treatment and services. The medical records must appropriately have all of the patients' medical history.

2. RELATED LITERATURES

Miller, looked at the role of national governments over the past decades demanding a proactive stance to minimize healthcare cost with improve quality and availability of healthcare services to all citizens of their respective countries.

Brown, suggested that electronic clinical information system (ECIS) provides valuable awareness into data quality and accuracy in relation to healthcare. **Brown** further emphasized a great need for improved education and protocols for data entry for (ECIS) and also ensuing follow-up of patient clarification on the policy for duration and frequency treatment.

Laubbel, define medical, health record, or medical documentation of patient's medical history and care as "medical record" used both as the physical folder of patients and for the body of information which comprises individual's health record. Medical records are extremely individual details that require ethical and legal framework such as a third-party access and suitable data preservation and disposal. Furthermore, the imminent benefit depends on the use of computer-based patient record system that renders healthcare records with management information system with resource-based uses, quality of care and maximum supervision is attained by analysing Hospital database scheme that is cost-effective, not time consuming, maximize efficiency and effectiveness, as well as promote standardization of active healthcare platform for the growing population.

3. RESEARCH METHODOLOGY

The research explores Microsoft Access 2013 for the designing the proposed healthcare application. It uses a systematic platform with several techniques to carry out specific activities. The proposed system will make uses Microsoft visual basic 6.0 as an end point and dome other office application package suits.

(A) The Old System

The traditional platform is time consuming due to the rigorous procedural steps involved such as diagnosis, drugs prescription and a long queue system seeing a doctor. Faced with difficulties in processing and tracking patient medical record(s), time-consuming and limited storage capacity.

(B) The Proposed System

The proposed system is design for medical professionals to monitor patient's medical details (diagnosis, prescription, admission, discharged etc.). It eliminate the problems faced by the old system and improve on the efficiency of patient record management system that is cost-effective, less time consuming and renders accuracy and privacy as only authorized users can gain access to the records as opposed by the old system.

(a) Homepage

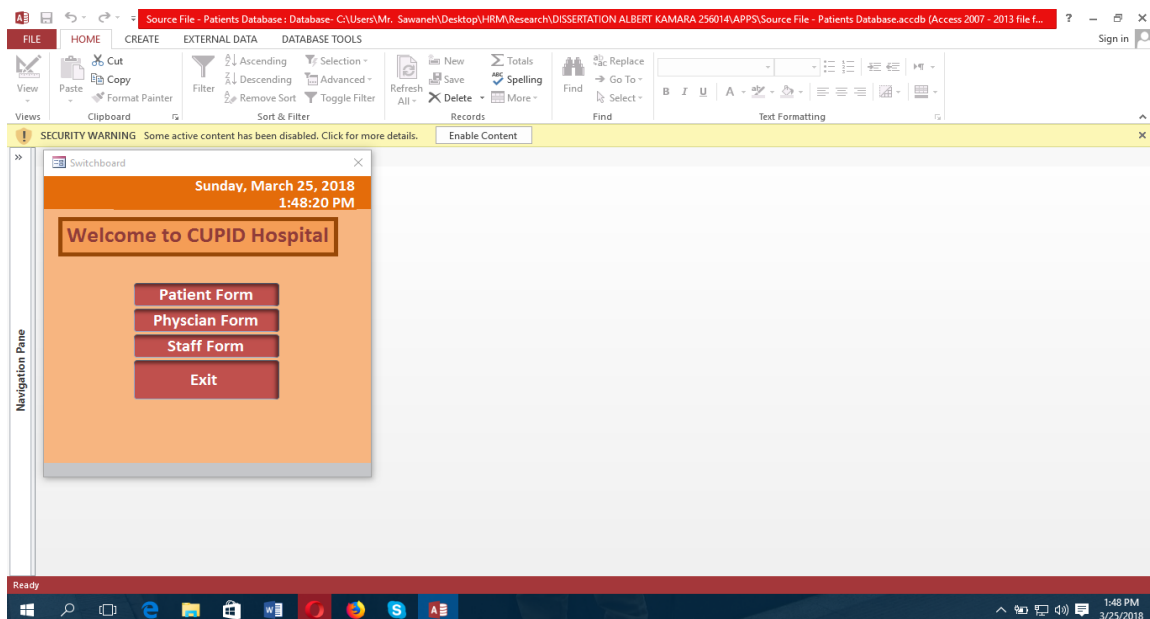



Fig. 1 Interface of the Proposed System

A Medical application is designed known as CUPID consisting the Patient Form, Physician Form, Staff Form and Exit as the home page.

(b) Patient Registration Form

Patient Id	001	Date of Admission	3/23/2017
First Name	Peter	Date of Discharge	6/2/2017
Last Name	Kargbo	Doctor in Charge	Doctor Kamara
Sex	Male	Tel No	232-77-521-477
Address	12 Regent Road, Freetown	Charges	\$5,000,000.00
Ward ID	3	Staff ID	423
Illness	Fatial Accident	Photo	

Blood Prasure	Temperature	Weight	Sugar Level	Test Result	Staff ID
Low	Normal	High	Normal	Lost of Blood	423

Fig. 2 Patient Registration Form for the Proposed System

Patent Form: Use to view the detail of each patient

(c) Physician Form

Patient Id	001
First Name	Amos
Last Name	Kargbo
Address	12 Hospital Road, Kissy
patient Tel No	77565432

Fig. 3 Physician Form for the Proposed System

Physician Form: use to view the details of each physician work in the clinic.

(d) Staff Form

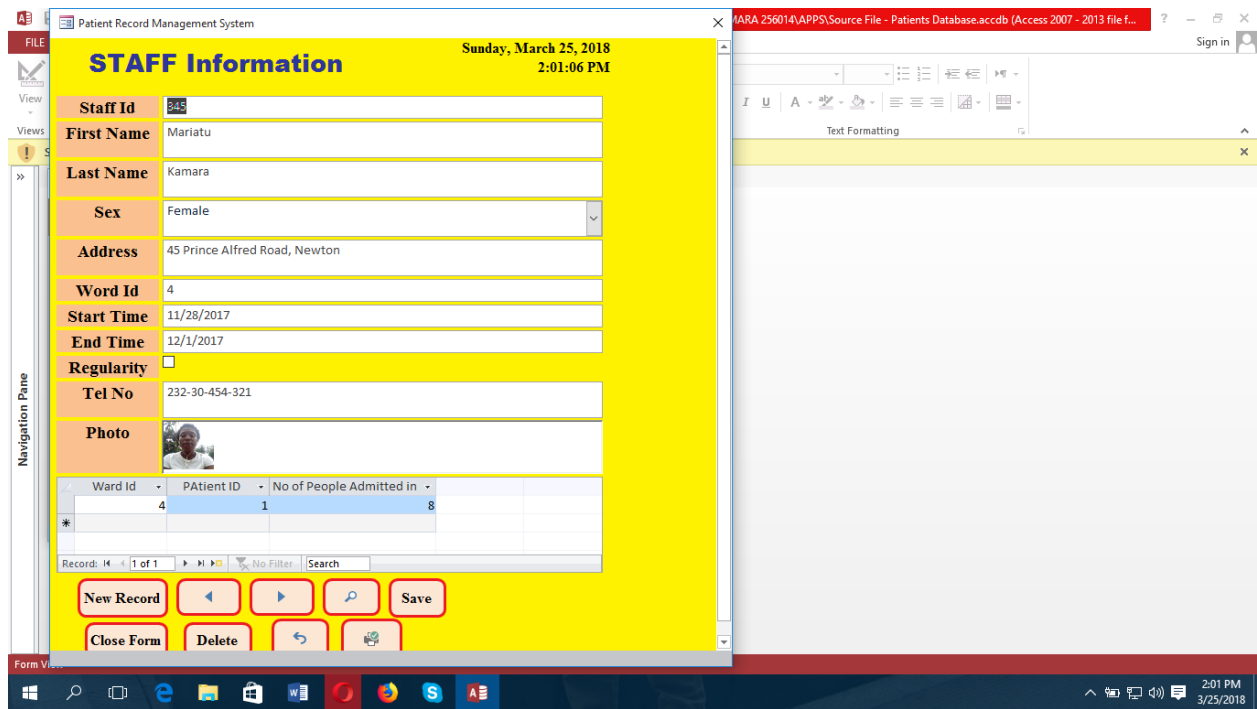


Fig. 4 Staff Information for the Proposed System

Staff Form: use to know the details of each staff in the clinic.

Advantages

- ☞ Facilities to view once medical records at any time;
- ☞ Allows healthcare professionals to always monitor their patients;
- ☞ Rendering safe and secure diagnosis and prescriptions with accuracy;
- ☞ Reduces data transmission rate;
- ☞ Hinders third parties or unauthorized users;
- ☞ Automatically update patient’s medical records (admission and discharge);

Disadvantages

- ☞ Requires regular training session for healthcare workers;
- ☞ Requires continuous power supply (not frequent in most hospitals in developing nations);
- ☞ Provisions of computers to all departments in all the hospitals across the country;

4. CONCLUSION

The research presents a patient medical record system that can be manipulated (sort data, data handling, search, update and store patient medical records securely). This portrays the prominence and essential features with computer application that manages medical records in hospitals. It reduces paperwork, reduces time spent by patients in the course of waiting for their files to be retrieved, reduce the storage space, increase the transmission rate of data flow, it is cost-effective and possible reduce hospitalization by allowing patient to be monitored by healthcare professionals whilst at home or at work. The proposed system provides solution to the conventional system. Furthermore, the system renders accuracy and correctness in medical data as no files are mission in the process and enhance the retrieval of patient data easy. The management of Cupid Health Centre has agreed that the manual method of keeping patient records be replaced with a computerized patient medical record system to minimize data inefficiency, and undependability posed by the traditional system.

5. RECOMMENDATIONS

The table below illustrates a list of recommendation that will be more specifically related to the database design.

TABLE 1: Recommendations

Stakeholder	Requirements
Doctors	Access their own patients' information Enter blood test results Enter depression indicators Enter own notes Enter explanation for dropping patients out of study
Patients	Access their own medical profile Access the doctor's notes
Supervisors	Access all patient information Access all doctors' notes Access information about the drug each patient is taking Add and remove patients from the database
Secretary	Access to the patients' schedule
Nurses	Enter vital signs including blood pressure, heart rate, and weight

6. FUTURE RECOMMENDATIONS

The researchers based on their findings suggest the following future recommendations:

- ☞ The incorporation of wireless body area network (WBAN) that allows individual's medical record to be instantaneously monitored irrespective of their location by healthcare professionals;
- ☞ The use of medical sensors that detect symptoms and transmit them on medical servers routinely for the smooth supervision;
- ☞ The use of body heat to operate medical sensors instead of batteries;
- ☞ The integration of SQL server to medical database rendering smooth data transmission.

ACKNOWLEDGEMENTS

The authors would like to thank Prof Paul Kamara – Chief executive Officer, Dr Michael N. Wundah, Dr David K. Koroma from the Institute of Advanced Management and Technology, Freetown Sierra Leone for their supports and encouragement.

REFERENCES

- [1] Fellegi, A and mooney, S. (1998). Population and higher individual standard for the quality of life.
- [2] Miller, R. J. (1994). "Modernizing Health care through Electronic Medical Record "information system <http://www.clinictools.org>
- [3] Brown, P.J. (2000). Evaluation of the quality of information retrieval of clinics finding from a computerized patient database using a semantic technological.
- [4] Laubbel, A. (1998) "Define medical health care, or medical documentation of a patient history and care.
- [5] Schneider, K., & Wagner, I. (1993). Constructing the Dossier Representative. Computer-Based Information Sharing in French Hospitals. In: Computer Supported Cooperation Work, NO 1. Kluwer Academic Publishers.
- [6] Laing K. (2002). The benefits and challenges of the computerized electronic Medical record (Web page retrieved February 20, 2007 from the world wide web. http://en.wikipedia.org/wiki/medical_prescription. <http://en.wikipedia.org/wiki/laboratory>
- [7] Hunt, Dereck, L. Hayners, R.B. Hanna S.C, Smith and kristia (1999). Effects of computer based clinic. Decision system on physician. <http://www.va.gov./133h>.
- [8] Tumba, I.A (2006) information system development to enhance the work of medical practitioners in hospital/clinics.
- [9] Landon, K.C. and London, J.P (2002), Management Information System, Prentice- Hall, New Jersey.