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INTEGRATION OF ICT IN HEALTH SERVICE MANAGEMENT IN HEAL AFRICA HOSPITAL IN DRCONGO

*Vambe Musavuli Nzanzu Guylain, **Conrad M. Mubaraka & ***Mamman Jibia Salisu

*Master of Science in Information Systems Candidate, Cavendish University, Kampala, Uganda
**Senior Lecturer, Faculty of Science and Technology, Cavendish University, Kampala Uganda
***Lecturer, Hassan Usman Katsina Polytechnic – Katsina – Nigeria

Abstract

The study set out to design, develops and implements a health service management system for Heal Africa Hospital; one that was established to provide improved holistic services to refugees by migrating from manual to computerized system. Using prototyping the researchers solicited for system and user requirements that led to the development of the management system. The system to date has registered success in as far as patient records management of Heal Hospital is concerned. Since the system focused on patients' records mainly, researchers recommend that similar approach be extended to other departments to give a comprehensive service management system and later other hospital to benchmark.

Keywords: *Patients' Records, Heal Hospital, Health.*

1. Introduction

HEAL Africa is a democratic republic of Congo-based non-governmental organization founded and registered in the Democratic Republic of the Congo and registered as a 501(c)(3) charity in the USA. It is also affiliated with HEAL Canada and has non-profit status pending in the UK. It was founded over a decade ago during the peak of the conflict by Congolese orthopedic surgeon Jo Lusi and his social activist wife Lyn. HEAL Africa is a direct response to the horrific conditions in which war victims lived. Their partners proactively worked with communities to transform the status of women and bring village life back into balance. Through its full-service training hospital in Goma and its community-based initiatives in public health, community development, and conflict resolution, HEAL Africa works with individuals and communities to restore health services, build hope, and help create a better future for all people of the DR Congo. Today HEAL Africa has a staff population of 28 doctors, 54 nurses, about 340 community development advocates and educators, 8 administrative staff and hundreds of Congolese volunteers.

Contextual Perspective

The Existing system involves the recording of patient information on paper. The information is then registered in books for future access. Heal Africa Hospital constitutes many health professionals(caregivers) who provide care to the patient's first encounter with the hospital is when he/she has a medical problem where he/she needs to see a caregiver. Patients' medical records are recorded on cards which are later re-written to registry books. Access of patient information is difficult when a caregiver needs to know how a patient has been treated ever since he/she came to the hospital. The knowledge of the number of patients and their re-attendances are noted by numbering of the patients in the registry books. Each ward, out-patient and in-patient has its own registry book and whenever a patient arrives at the hospital his demographic information is recorded over and over again which is a waste of time. When a person is sick, he/she is either taken by a friend, relative or comes by him/her self to the hospital. There is currently no scheduling system for patients' appointments. The knowledge of a patient visit to the hospital may only occur when he/she has been requested to come back to hospital for check up by the caregiver.

Upon reaching the hospital, the caregiver takes the patient's information which is recorded on cards. At this point information such as name, age, sex, if the person has been referred in the hospital then the hospital name is recorded; the temperature and body weight is also recorded to guide the doctor in determining the best treatment for the patient. A new card is given to new attendants or progressive treatment is added on the card that the patient may have carried having visited the hospital earlier on. During the patient's visit, the caregiver may add information to the patient's card or produce documentation that is later added to the patient's information collection. The patient is then forwarded to the doctor who requests the patient to take diagnostic tests like clinical laboratory tests; he also orders medication for the patient that the patient picks from the pharmacy. At this point information such as treatment given to the patient is recorded on paper or medication card, which in the end is compiled and entered into the registry.

From the subjective and objective findings, including diagnostic test results, the doctor may decide that a patient should be admitted as an in-patient where by more details such as physical finding and ward allocated to the patient are noted if the patient's condition is worse. Up-on being admitting as name, address, age and contact, and including admitting diagnosis is noted. The patient is allocated award. Usually, all patient Inpatient medications are taken away and medication administration is highly controlled during the hospital stay. The care plan for the patient is drawn such that appropriate medication is provided. The caregiver's orders are recorded on papers which are then filed. If the patient's

condition is not too bad, treatment is given to the patient which he/she can take from home. The patient may be requested to re-visit the hospital for check up after he/she has taken the medication.

After treatment, observations of the in-patients condition are taken and the end results of this may be death or recovery. In case of recovery, the patient is discharged and requested to complete medication form home. At the point of discharge, information such as admission diagnosis, final diagnosis, status of the patient and date of discharge are recorded. There are situations when a patient fails to recover or improve, he/she is referred out hence the hospital to which the patient was referred out to is also recorded on discharge.

Statement of the Problem

Heal Africa hospital is still using a manual paper system of patient record keeping. Patient's details are kept on papers or documents which restrict access to specific information. Like many hospitals in Democratic Republic of Congo, Heal Africa hospital lacks an automated patient record system to actively assist in automated hospital reasoning that would normally require skills that the medical personnel's do not possess or provide safety against common human errors. Patients are always referred to other hospitals for sophisticated diagnosis, in such a situation; records need to be quickly and accurately retrieved. The Existing system cannot handle this situation hence a need for an electronic patient record system that will provide beneficial access to patient data. Therefore this study intended to develop an electronic patient record system for Heal Africa to that effect.

2. Literature Review

Quality Health Care and Safe Environment

According to Stephen (2006) leveraging the right workforce can help the department of Obstetrics and Gynecology fulfill its critical missions of delivering quality care, controlling labor costs, minimizing compliance risks and retaining productive, satisfied employees. The five-step plan that can be used to manage workforce to support high-quality healthcare and create a safe environment for patients and employees include: i) plan by doing schedules and taking into account employee skills, availability, seniority, and shift preferences in addition to required staffing ratios; ii) execute by staffing systems quickly and create a call list of available, qualified, and cost-effective employees to fill open shifts; iii) ask whether both the users and administrators have the high-quality information they need in order to evaluate whether their system creates a safe environment for patients and staff; iv) respond by posing, does the department provide front-line users with early warnings and alerts to identify potential labor performance problems; and v) learn to see whether the department supports a culture of accountability by providing managers with the information they need to manage their workforce responsibly. Each of the five steps above represents an opportunity to support high-quality healthcare and create a safe environment for patients and employees.

Achieving patients' information safety through computer based systems

Jossey-Bass & Roberta (2008) argue that the implementation of risk management in Gynecological healthcare delivery in hospitals is one of the key measures that can be taken to prevent loss of patient information and enforce patient safety. However, Cacciabue and Vella , (2010) discussed some crucial issues associated with the exploitation of data and information about healthcare for the improvement of patient safety. In particular, the issues of human factors and safety management were analyzed in relation to exploitation of reports about non-conformity events and field observations. A methodology for integrating field observation and theoretical approaches for safety studies was described. Two sample cases were discussed in detail: the first one made reference to the use of data collected in the aviation domain and showed how these cold be utilized to define hazard and risk; the second one concerned a typical ethnographic study in a large hospital structure for the identification of most relevant areas of intervention. The results showed that, if national authorities found a way to harmonize and formalize critical aspects, such as the severity of standard events, it was possible to estimate risk and define auditing needs, well before the occurrence of serious incidents, and to indicate practical ways forward for improving safety standards of patients (Dunn, 2007 and Gapenski, 2007).

With respect to the above studies, the researchers strongly believe that the use of a computer based application running on a well-established database will reduce the loss of patient information. This will also provide for timely approaches or measures for patient safety, effective retrieval of information and error reduction.

Impact of computer based application on hospital management

According to Villamanan and Alvarez-Sala (2009) concern about patient safety was a priority in the quality policy of health systems. In the pharmaco-therapeutic process, from prescription to administration of drugs, failures that cause dun wanted effects in patients could occur. This was especially common in patients with multiple gynecological problems in medical specialties services. It was essential to analyze and identify the causes that triggered medical errors to prevent their occurrence and it could be achieved through employing experienced workers (Dunn, 2007; Gapenski, 2007; Jossey & Roberta, 2008). However in our opinion, a computer based system became an attractive tool for ensuring patients safety.

Incentives for implementing sophisticated clinical information systems

Cacciabue and vella (2010) suggested that the opportunity to improve care using computer reminders is one of the main incentives for implementing sophisticated clinical information systems. A systematic review that was conducted to quantify the expected magnitude of improvements in processes of care from computer reminders delivered to clinicians

during their routine activities. Studies were included in the review if they used a randomized or quasi-randomized design to evaluate improvements in processes or outcomes of care from computer reminders delivered to physicians during routine electronic ordering or charting activities (Gapenski, 2007 and Jossey & Roberta, 2008). The results were that computer reminders produced much smaller improvements than those generally expected from the implementation of computerized order entry and electronic medical record systems. Further research is required to identify features of reminder systems consistently associated with clinically worthwhile improvements.

3. Methodology

The researcher used the system development life cycle (SDLC) to logically develop the system including its requirements, validation and training; and by applying structured system analysis and design methods system requirements were elicited. These include: i) Functional Requirements such as user friendly menu from which the user can select the transaction; capture data and store it; and print out reports; not accept duplicate records; have a backup capability in case of any failures; and be password protected; while ii) non functional requirements include being easy to use, have user friendly interfaces and tolerate failure more than three times in a day.

Figure 1: Data Modeling

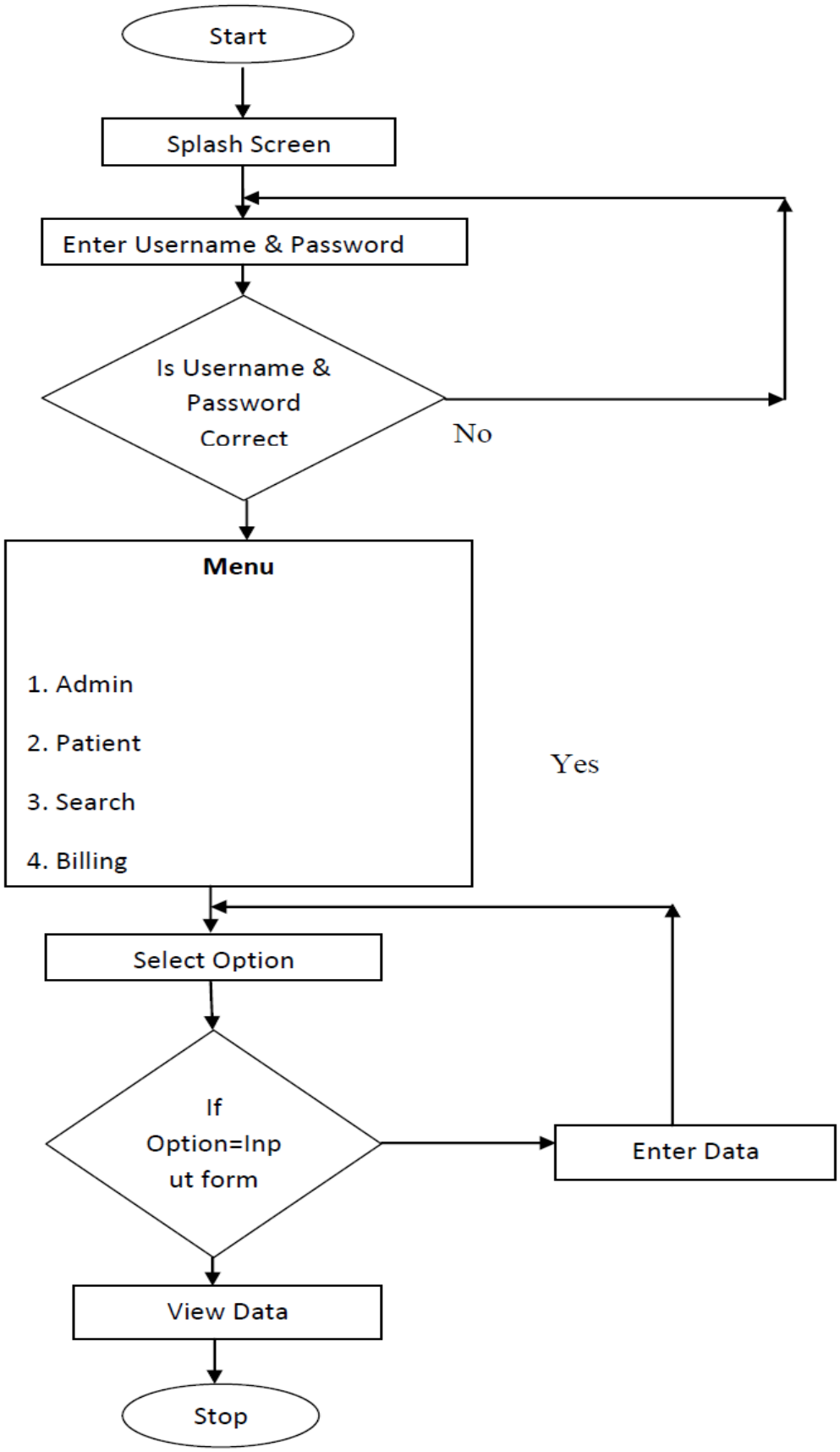

Figure 2: The Data Flow Diagram

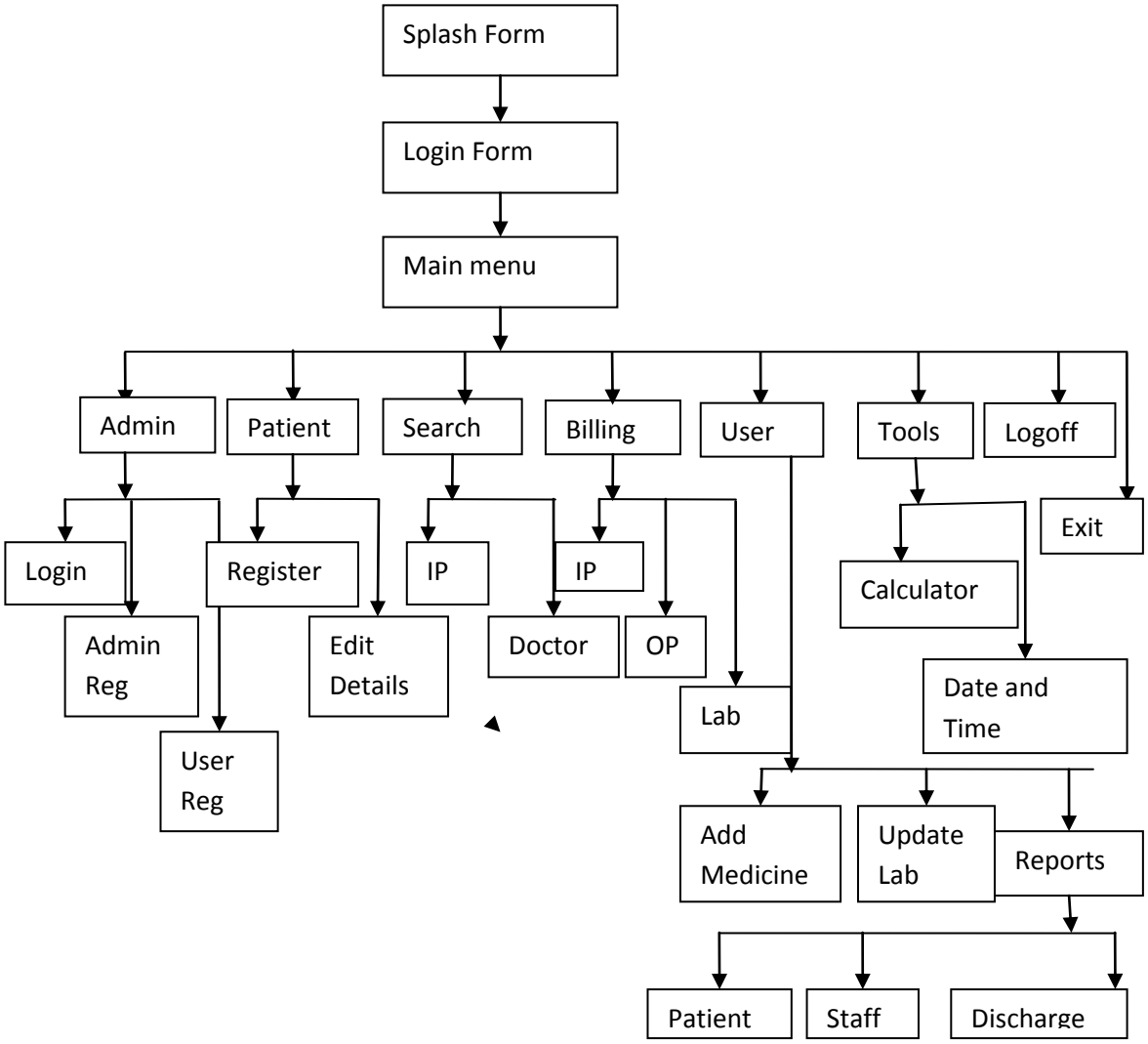

Figure 3: The Hierarchal input and output process (HIPO)

4. Implementation

Below are some pertinent snapshots of the hospital management system.

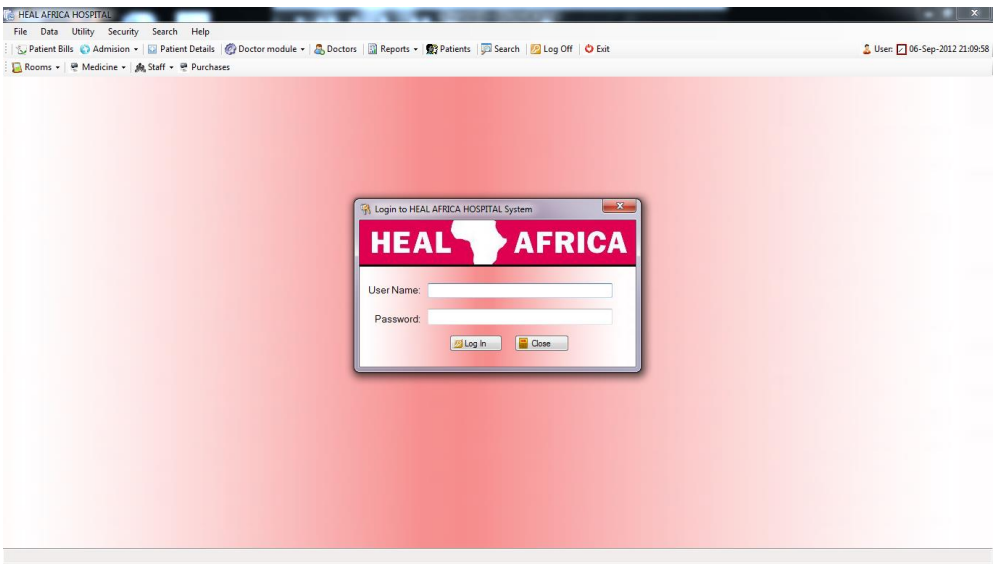

Figure 4: Log in Page

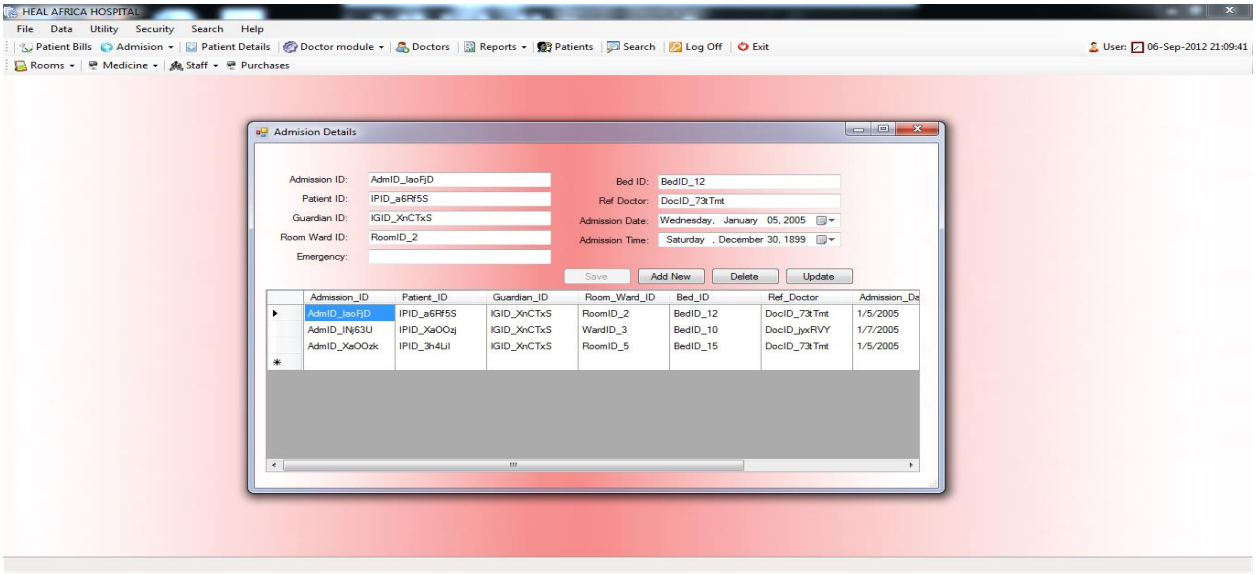

Figure 5: Patient admission Details

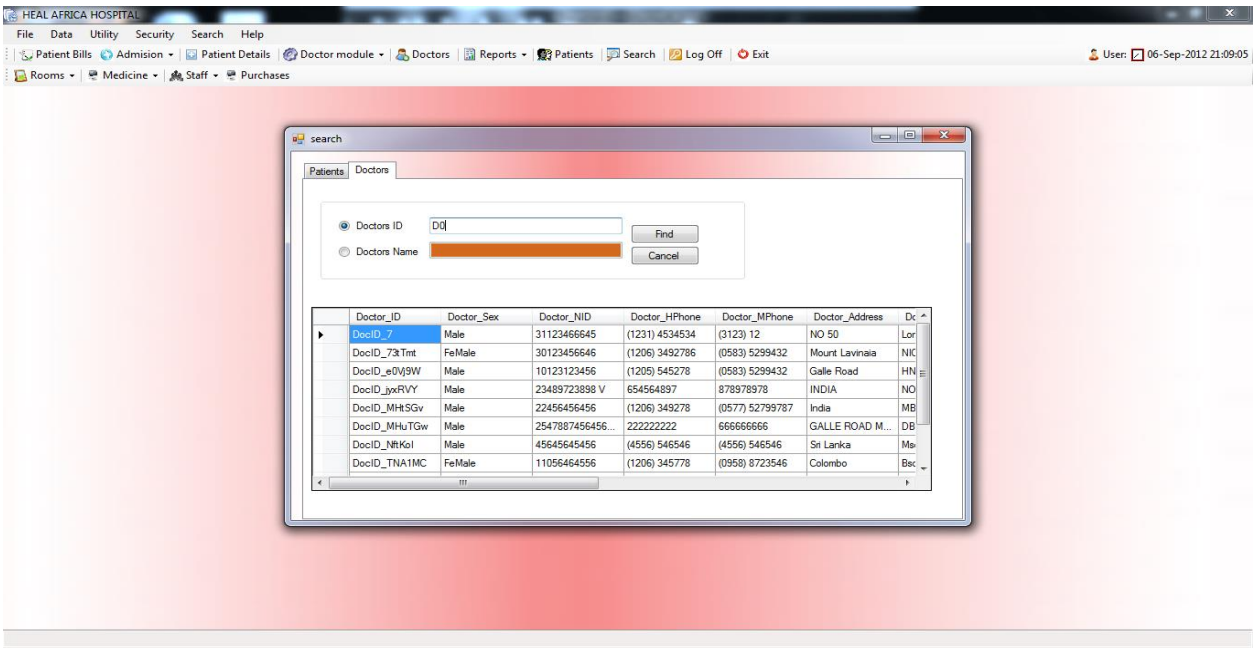

Figure 6: Search Mast form

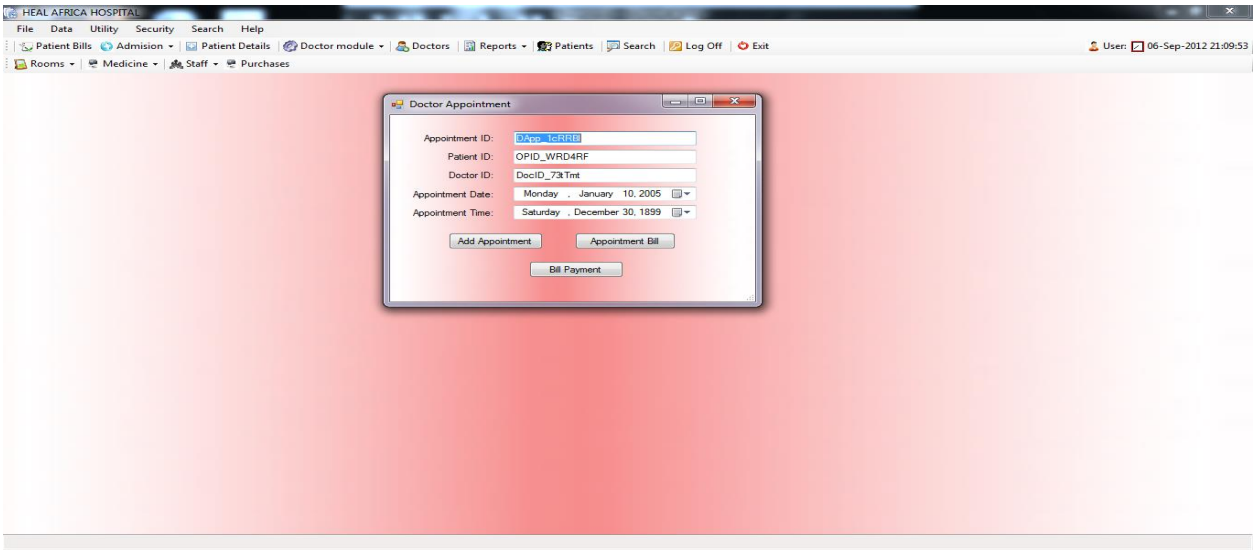

Figure 7: Doctor Appointment Form

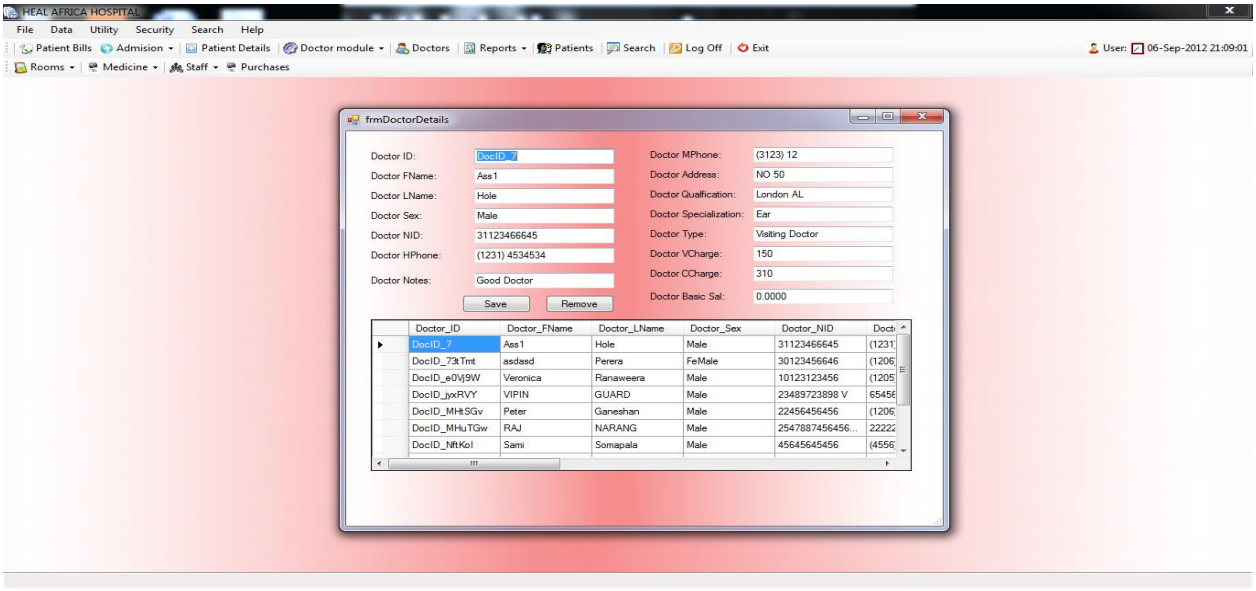

Figure 8: Doctors details

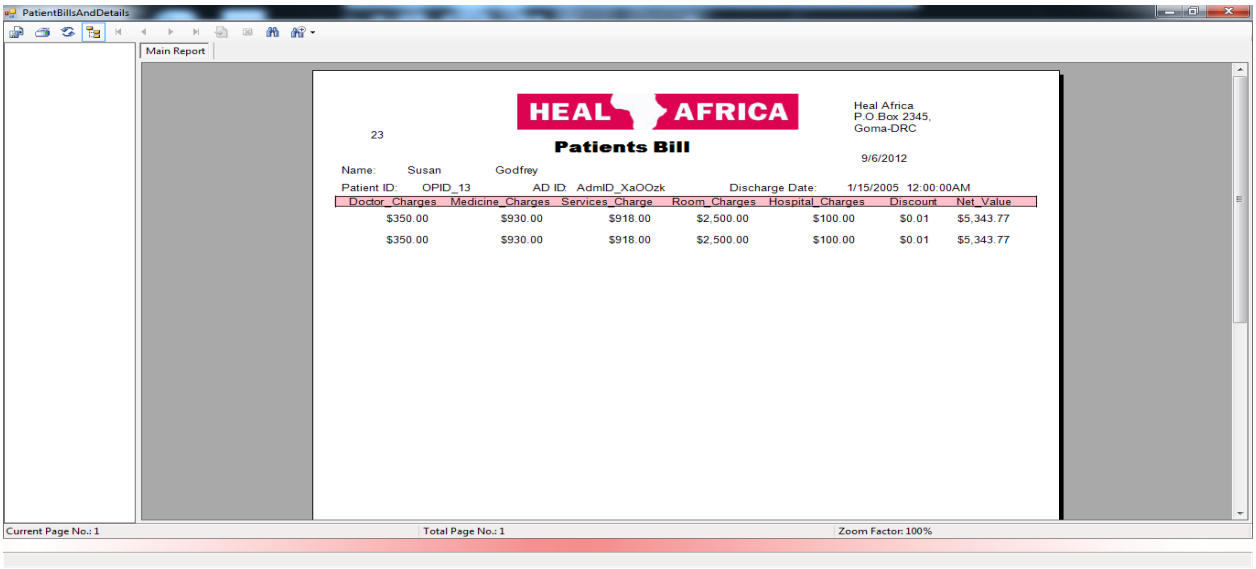

Figure 9: Patients Bill

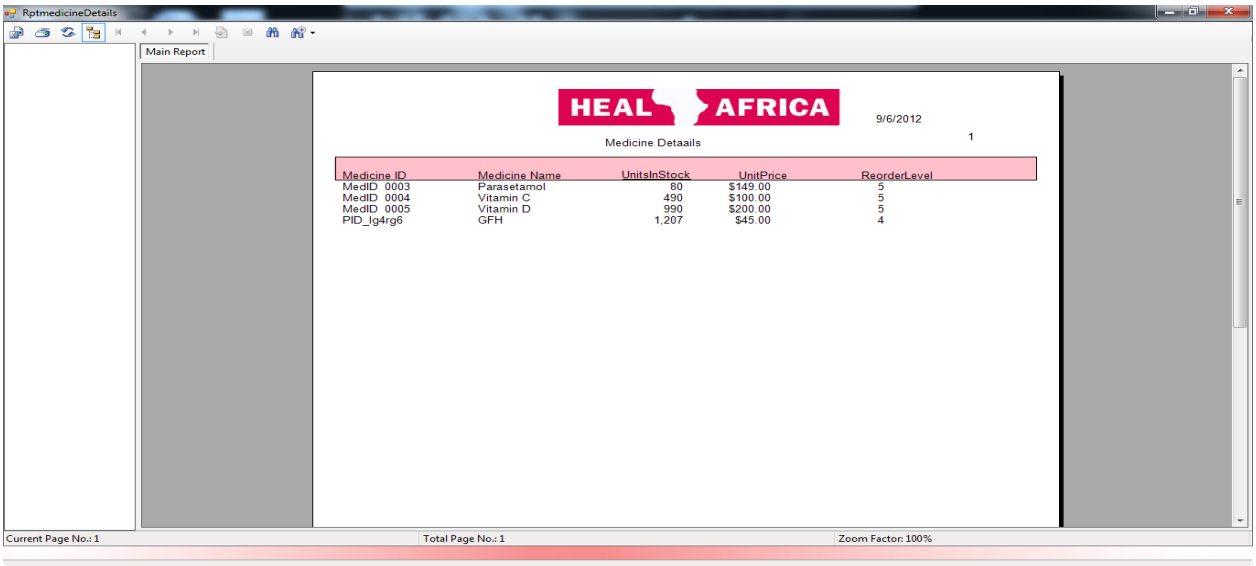

Figure 10: Medicine details

5. Conclusion and Recommendations

The HEAL Africa Hospital management system was designed as specified and has improved service delivery in Democratic Republic of Congo (DRC). The researchers thus recommend that since DRC is big similar applications be incorporated in government planning; and also be integrated to quick response and emergency management and knowledge sharing.

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