Sub-Saharan African Medical Record Informatics Electronic Health Record Design

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Abstract

One of the rapidly expanding inventions of the twenty-first century is electronic health records. In developed nations, it acts as the foundation of medical operations. Unfortunately, despite the wealth of advantages offered by electronic health records, many developing nations, notably sub-Saharan Africa, have failed to adopt them. A design paradigm that can be used in these economies is presented in this research. In order to guide the design process, a typical hospital's operational work flow was created. The front end application gathers patient data, which is then entered into the database via the integrated fingerprint access control; a career is given a role-based access level. A configured server connects all of the carers' workstations to the electronic health records.

Keywords: Electronic health record design • African medical records • Community healthcare workers

Introduction

When implemented, the planned electronic health record system will make it possible to optimise managerial and clinical procedures. Clinics and hospitals in the underdeveloped countries can afford the system. It can be modified to fit an organization's particular objectives or needs. In many poor nations, paper-based health records continue to be an important part of public and commercial health care institutions like hospitals, labs, and pharmacies. Because paper-based health records are difficult to keep and manage and contain enormous amounts of heterogeneous data, they are significantly less efficient and effective. The Electronic Health Record system has a long history of providing effective and high-quality healthcare. To ensure ongoing, effective, and high-quality integrated health care, an electronic health record may be defined in the context of health informatics as a repository of information about the health status of subjects of care in computer-processable form that can be shared between authorised users of the electronic health record. The Electronic Health Record contains all the information regarding a person's health, including all consultation, visit, admission, and post-hospitalization hospital behaviour as well as physical, mental, psychological, and physiological aspects. The implementation of an electronic health record allows for effective time management of staff and patients, as well as simple patient feedback and follow-up by medical staff [1-3].

Literature Review

Due to the electronic format in which health information is recorded, an electronic health record is versatile and adaptive. Some Electronic Health Record are designed to prevent disease, but others can help with more accurate patient health status diagnosis. As various healthcare practitioners can access an Electronic Health Record via remote access and sharing platforms over a secured channel, information does not need to be repeated every time, making electronic health records easily reusable. To accomplish the desired goal, the Electronic Health Record system should be created in consultation with the healthcare professionals.

The Electronic Health Record must also guard against security lapses and unauthorised access. By preventing the theft of patients' personal information, this will increase both patients' and healthcare providers' confidence in the Electronic Health Record system. A well-designed electronic health record can help medical professionals learn useful information about their patients' health since analysis can be completed more quickly and with less difficulty. The use of Electronic Health Records was only documented in fifteen African countries, and 91% of these used open source healthcare software, despite the fact that they have become a crucial part of medical informatics in many other countries on other continents. Today, a lot of electronic health records are proprietary and frequently cater primarily to particular departments, like the lab or the pharmacy. This project aims to propose a design framework for integrating an electronic health record into sub-Saharan African medical informatics. The adoption of a nationalistic approach that takes into account the available and potential resources, national health plans, and stakeholders in order to provide integrated action and collaboration between healthcare facilities and related organisations is necessary to ensure the interoperability of electronic health record systems. According to the Health Care Information and Management Association, electronic health records can be divided into stages based on their capabilities. Models for acceptance and maturity of electronic health records are also available. The electronic health records design elements will be chosen based on the intended functionality.

Discussion

In order to reach the target audience for adoption, it is necessary to undertake scenario analysis, create goals and objectives that are in line with national health policies, develop a work plan and monitoring system, and widely publicise the nationwide Electronic Health Record project. The choice of centralising or dispersing data storage across many locations can also be chosen. For sub-Saharan Africa, a distributed strategy will be a preferable option because it offers shorter response times and lets each institution keep ownership of the data it collects. In terms of needed network bandwidth, the strategy is similarly economical [4-6].

The infrastructure architecture should combine client-server web applications for laptops and desktop computers with mobile applications that operate on mobile devices like smartphones and tablets. In order to reduce the amount of electricity needed, desktop computers may only be used in public areas. Laptops and tablet PCs may be used in offices, while cell phones may be beneficial when visiting patients on the ward as a clinician. In a dispersed method, all compute and storage may be housed on a single server; in a centralised approach, it

may be cloud-based. It would be ideal if public funds could be committed to the EHR project due to the significant investment (project team, infrastructure, maintenance, training, and user support cost necessary and the intangible nature of the rewards. If not, mixed funding may be used either directly or indirectly.

Conclusion

The developed web-based application can add or remove patients and healthcare providers as required. After successfully logging in through the website, all previously enrolled healthcare practitioners can access the pertinent area of the electronic health record system. Name, gender, age, date of birth, height, weight, body mass index, genotype, blood group, identification, last visit, doctor's notes, test results, and many other pieces of information can be entered into the database fields for both officials and patients. The design of electronic health record systems is adaptable, and there is good system-wide compatibility.

Acknowledgement

None

Conflict of Interest

The authors declare that there is no conflict of interest associated with this manuscript.

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