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Perspectives

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A critical insight into electronic health records

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ABSTRACT

Background/Objective: Health record is the business record of the healthcare system, documented in the normal course of its activities and used for clinical, research, administrative, and reimbursement purposes. In Nigeria, patient's health records are mostly paper-based and are managed manually. The manual process is of course bedeviled with various challenges such as illegible handwriting, missing and misplacement of records. This conventional paper-based method has however been instrumental to the delays to diagnosis and treatment, thereby making electronic health records (EHRs) mechanism as a necessary alternative. EHRs are means to create legible and organized recordings and to access clinical information about individual patient. This paper therefore set out to discuss the concept of EHR, the potential benefits of EHR, its implementation and the major ethical issues associated with EHR. ***Methods/Design:*** This is a non-empirical review of literature. ***Result:*** Findings from this study reveal that easy access to clinical data, ability to establish and maintain effective clinical workflows, fewer medical errors, improved patient safety and stronger support for clinical decision-making among others are enormous benefits of electronic health records. ***Conclusion:*** The paper therefore recommends the adoption of electronic health records system in tertiary hospitals in Nigeria.

Keywords: *Data Integrity; Data Protection; Electronic Health Records; Ethical Concerns; Information Security*

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INTRODUCTION/DISCUSSION

Health record is the business record of the healthcare system, documented in the normal course of its activities and used for clinical, research, administrative, and reimbursement purposes. Mostly, patient health records are paper-based and are managed manually which has its attendant challenges such as illegible handwriting, missing and misplacement of records. These may often cause delays to diagnosis and treatment among others. It is widely agreed that the old method of handling health records is a problem and that Electronic Health Records (EHRs) could be the remedy. However, there is need to understand EHR. Therefore, there is need to understand the concept of EHRs.

Concept of EHR

Electronic Health Record is a repository of patient data in digital form, stored and exchanged securely, and accessible by multiple authorized users. It is the aggregate electronic record of health-related information on an individual that is created and gathered cumulatively across more than one healthcare organization and it is managed and consulted by licensed clinicians and staff involved in the individual's healthcare of patients[1-3]. It contains retrospective, concurrent, and prospective information and its primary purpose is to support continuing, efficient and quality integrated healthcare[1-3]. Electronic health records focus on the total health of a patient. Records' "interoperability" means that providers even, at different workplace and location, can

share information with each other. "An electronic health record is more than just a copy of patient's health records. A very important value of EHRs is that the patient's health records become more accessible by authorized users[4,5]. Since EHR as one of the applications of e-health could be described as a safe, secure, ethical and cost effective transmission and exchange of health data and information[6]. Experts identified many barriers to adoption of EHR, which includes inadequate IT skill for proper implementation[7,8], privacy and confidentiality concerns, and security for computerized patient information[9,10], concern over the ability to select and effectively install EHR system[11] and technical support[12]. However, despite the identified challenges, EHR has potential benefits.

Potential benefits of EHR

In the 2012 edition of the Physician Sentiment Index, United States of America published by athenahealth and Sermo, 81% of physicians were reported to believe that EHRs improve access to clinical data. More than two-thirds opined that an EHR can actually improve patient care[13]. Similarly, literature revealed that the use of an EHR system offers the following clinical and administrative advantages[14-18].

i. No bulky paper records to store, manage and retrieve.
ii. Easier access to clinical data.
iii. The ability to establish and maintain effective clinical workflows.
iv. Fewer medical errors, improved patient safety and stronger support for clinical decision-making.
v. Easier participation in Meaningful Use, Patient-Centered Medical Home (PCMH) and other quality programs, with electronic prompts ensuring that the required data is recorded at the point of care (POC).
vi. The ability to gather and analyze patient data that enables outreach to discreet populations
vii. The opportunity to interact seamlessly with affiliated hospitals, clinics, laboratories and pharmacies.
viii. Lessening delay in treatment.
ix. Decreased official waiting time.
x. Improved communication between healthcare providers and among healthcare team and
xi. Ensuring the best care.

Having discussed the challenges and potential benefits of EHR, there is the need for guidance on how to kick-start this modern approach to managing health information.

EHR implementation guides

The following guides were recommended to successful implementation of EHRs[19-23].

i. Goal Setting - Plan for the location of workstations, consider network setup by ensuring that connectors work appropriately, consider and plan for issues that may arise as regards electricity supply and develop and evaluation toolkit.
ii. Hardware installation - Ensure the functionality of the network and the hardware. Install and verify scanning and faxing equipment. Train the staff and ensure the team is working well together.
iii. Establish the protocols for scanning incoming information and faxing outgoing information. Continue the staff training and receive feedback. Install and test any ancillary programs which might either be required or be very helpful.
iv. Test the functionality of all the equipment. Decide on the type of information to capture. Run through some mock patients in order to get a feel for how the system is works.
v. Establish a protocol for inputting all useful information such as medications, allergies, problem list and so on, into the electronic chart. Conduct regular staff meeting to review activities. Continue to think of new ways to use new record efficiently.
vi. Migrate the old paper-based health records to new EHR. Migration can be done by scanning entire paper chart into EHR or the physician enters patient data into EHR gradually or other healthcare giver enters some patient data such as allergies, medications and so on into EHR.

vii. Successful implementation of EHR requires determination to be dynamic, proper planning and availability of necessary resources such as man, money, methods, materials etc. Proper coordination and team spirit among the healthcare givers is of necessity. Successful implementation requires:

a. Regular evaluation and feedback mechanism.
b. Willingness to follow the guide for implementation is of great importance.
c. Diligence in migrating from traditional to paper records is required so as to avoid loss of valuable data and information.

However, due to the numerous values of health records and the legal implication of managing these records, there is the need to discuss the ethical issues relating to EHR.

Ethical issues in EHR

There are many ethical concerns over HER. There include:

i. Privacy and Confidentiality of EHR.

The information that is shared as a result of a clinical relationship is considered confidential and must be protected[24]. The key to preserving confidentiality is making sure that only authorized individuals have access to the information[25]. Controlling access to health information, extensive training and strong privacy and security policies and procedures are essential to securing EHR.

ii. EHR's Protection

EHR should be protected against: data theft and alteration, potential threats of information leakages, data hacking, information destruction, manipulation or even blackmailing of patients by the external or internal users[26-28]. Potential harms to breach of EHR could lead to identity theft, which can destroy a person's finances, credit and reputation. This could lead to legal action against the healthcare facility in which the breach occurred. Specific to protecting the EHRs in the developed countries which could be applied to developing countries is the United States Health Insurance Portability and Accountability Act of 1996 (HIPAA Privacy Rule)[29], which requires that healthcare providers set up physical, administrative, and technical safeguards for EHR[30].

iii. EHR Security

EHR security is the protection of the confidential data in patient's health records[31-33]. To achieve this, EHR scholars following guides:

a. Establish administrative controls
b. Monitor physical and system access
c. Identify workstation usage
d. Audit and monitor system users
e. Employ device and media controls
f. Placement of firewalls, antivirus, and intrusion detection software to preserve the system
g. Apply data encryption
h. Installation of a Protective Layer Software or Authorization Management Software
i. Control accessibility to the computer—limiting who can see what— provision of username, passwords and PIN numbers, limit access to EHR information.
j. Execution of Security Protocols and Password Protection measures.
k. Installation of Second Tier Verification Systems such as face recognition, Biometrics Identifier Scan including retina, finger or palm scanning etc

Personal identification data, clinical and administrative data recorded in EHR are private and confidential information and considered to be privileged communication between healthcare providers and their patients. Therefore, health records and information should be secured and protected from unauthorized access in order to forestall probable legal action post implementation of EHR.

iv. EHR Integrity

Integrity assures that the data is accurate and has not been changed [34]. Poor data integrity can result from documentation errors, or poor documentation integrity. A simple example of poor documentation integrity occurs when for instance, a pulse of 74 is unintentionally recorded as 47. Identifying this error in a paper-based health records may be onerous whereas,

EHR has tools in place to alert the clinician that an abnormal result was entered.

Conclusion

Medical practice as well as healthcare enterprise is increasingly information-intensive. Thus, good understanding of EHR and its successful implementations will enable providers to overcome the challenges bedeviling paper-based health records management and would in effect, prevent legal actions since EHRs is capable of ensuring privacy, confidentiality and security of patient health records.

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Authors Contribution:

OBM conceived of the study, initiated its design, participated in literature search, article selection and review, data analysis and coordination and drafted the manuscript.