

## **BENEFITS OF ELECTRONIC HEALTH RECORDS IN HEALTH CARE DELIVERY SYSTEM IN NIGERIA**

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### **Abstract**

This paper reported the benefits of electronic health records in health care delivery system in Nigeria. This article started with introduction, followed by discussion on health records management. Goals and benefits of electronic health records were brought to the bear and, applications used in implementing electronics health records, with their associated challenges in Nigeria were identified.

The instrument used for data collection was validated questionnaire. A total of ninety six (96) copies of questionnaire were administered, eighty two (82) were found useful which represent 85.42% response rate. Retrieved data were analyzed data using descriptive statistics of frequency count, percentage distribution and mean.

Findings revealed that accurate and complete information about a patient's health is guaranteed with electronic health records for improved healthcare delivery system. Epileptic power supply, network issues and delay in data entries at the starting point were identified as challenges that constituted impediments against EHR implementation towards effective health care delivery system in Nigeria

The study concluded that effectiveness of health care delivery system depends on the extent to which electronic health records systems are taken seriously by health care professionals in various health institutions. Therefore, government at all levels are advised to give maximum support and required encouragement to the implementation of electronic health records systems, so as to ensure quality health care services in Nigeria

**Key words:** *Benefits of Electronic Health Records, Health Care, Delivery System.*

Health care delivery services in the health institution require accurate and adequate health record management as documentary evidence of the care and treatment which the patient received in the hospital. Patient records are clear, concise and accurate history of a patient's life and illness, written from the medical point of view. They are the collection of recorded facts concerning a particular patient, his or her illness and the events occurring in the course of professional care for the purpose of providing the best medical care to the patient, for teaching, research, study appraisal of medical practice and legal requirements (Benjamin, 2001).

The healthcare provider makes an entry into the medical records with the actual occurrence of the event. The ability to maintain accurate and timely record is critical for effective health care delivery system. Omole (2015) submits that for the electronic health records system to be efficient in any health institution, there must be a health records department with adequate space, equipment and trained personnel. Accurate and complete health records must be written for all patients and the records must contain identification, demographic and clinical data to justify the diagnosis and warrant the treatment given. Also all entries must be signed by responsible person and health records must be filed, organized, and stored in an accessible manner, in a secured place in the health institution.

### **Statement of the Problem**

It is assumed that electronic health records system is critical to the provision of quality health care delivery system and personal observation of the investigator as a health records officer in Nigerian health care system, has shown that there is poor implementation of electronic health records system in most of the health institutions in Nigeria. Based on this assumption, this study examined the benefits of electronic health records system in health care delivery system in Nigeria with a view to contributing to finding solutions to problems associated with the implementation of electronic health records system in Nigeria.

### **Objective of the Study**

The specific objectives of the study are to;

1. To find out the benefits of electronic health records system in health care delivery system in Nigeria
2. To identify the challenges of implementing electronic health records system in health care delivery system in Nigeria

### **Research Questions**

The research questions for the study are;

1. What are the benefits of electronic health records system in health care delivery system in Nigeria?
2. What are the challenges of implementing electronic health records system in health care delivery system in Nigeria?

### **Review of Literature**

#### **2.1. Legal Requirements of Health Records Management**

Huffman (2011) asserts that hospitals must maintain a variety of records. The public health law in every state or country requires of those who own or operate hospitals to make records of the statistical particulars relative to patients available, and the likes are required for vital statistics and to alert proper authorities. The law (i.e. public health law) set forth minimum legal requirement relating to a health records management practice and these are:

- I. There shall be a health records department with adequate space, equipment and qualified personnel to include at least one registered health records officer or a person with equivalent training and experience in a hospital of one hundred beds or over.
- II. A health record shall be started for each patient at the time of admission with complete identification data and a nurse's notation of condition on admission. To this shall be added immediately an admission note and orders by the attending or a resident physician. A complete history and physical examination shall be recorded by the physician within twenty-four hours of admission and always before surgery, except in cases of unusual emergency.
- III. All health records shall include proper identification data; the clinical records shall be prepared accurately and completed promptly by physicians and should include sufficient information to justify the diagnosis and warrant the treatment; doctors' orders, nurses' notes and charts shall be kept current in an acceptable manner; all entries shall be signed by the person responsible for them.
- IV. Health records shall be filed in an accessible manner in the hospital and shall be kept for a minimum of twenty – five years after the discharge of the patient, except that original health records may be destroyed sooner, if they are microfilmed, computerized or digitized by a process approved by the Federal Ministry of Health.

Therefore all health institutions must conform to the minimum legal requirement of health records management practices. In accordance with the state regulation or statutes, having known that health records are used to indicate statistically the extent and quality of care being given in hospital and the information contain in them, is of great importance in health care, medical research and in resolving legal issues raised in suits concerning the patient's treatment in the hospital.

## **2.2 Methods of Managing Health Records**

Data and information are the life blood of the health care delivery system, and vital to the decision making process surrounding patient's care and hospital activity (Osundina, 2014).

AHIMA (2013) reveals that electronic record management must conform to national standard, be capable of exchanging information with multiple sources, and expose the health record managers to boundless opportunities as the profession transits to a national health management information system network. Health records may be managed manually or electronically (Olaniyan, 2014).

**1. Manual Method:** This involves the use of paper, ink and paper product in the creation, storage, maintenance and use of patient records. The strategies used in the manual method include the adoption of the basic health records management systems such as; numbering system, tracing system, filing system, appointment system, coding and indexing system. These systems are operational in a health records department, through various sections of the department such as; registration, admission and discharge, coding and indexing, statistics, and library sections. Information is made available to the users manually based on their needs and requests (Makata, 2015).

**2. Electronic Method:** This involves the application of computer system and other electronic devices into the creation, maintenance and use of patient records. The strategies used in electronic health records method include the use of hardware, software, human ware, procedures and storage devices. Application packages, such as multipurpose hospital information system (MPHIS), Microsoft Word, Microsoft Excel, District Health Information System (DHIS-2), Statistical Package for Social Sciences (SPSS), Electronic Coding Procedures and Instructions (ECPI), including storage devices like hard disc, CDROM, flash drive, network and internet services are adopted for effective management of health records and sharing of information with complete accuracy.

## **2.3. Electronic Health Records**

Russel (2011) asserts that electronic Health Record is a record that resides in a system specifically designed to support users by providing accessibility to complete and accurate data, alerts, reminders, clinical decision support systems, links to medical knowledge, and other aids.

It is otherwise called computer-based health records. Electronic health records are designed to contain and share information from all providers involved in a patient's care.

#### **2.4. Goals of Electronic Health Records**

AHIMA (2013) reports that electronic health records aimed to:

1. Improve quality of health care through data availability and links to knowledge sources.
2. Enhances patient safety with-sensitive reminders and alert, clinical decision support and device recall capacity.
3. Support health maintenance, preventive care and wellness through educational materials, home monitoring and tracking capacity.
4. Increase productivity through data capture and reporting format tailored to the user, e.g. streamlined workflow support and patient specific care plans.
5. Reduce hassle factors and improve satisfaction for clinicians and consumer via effective management of appointment system.
6. Support revenue enhancement through accurate and timely eligibility and benefit information.
7. Support predictive modeling and contribute to development of evidence-based health care guidance.
8. Maintain patient confidentiality and exchange data securely among all the key stakeholders.

#### **2.5. Steps in Implementing Electronic Health Records**

The basic steps that are involved the successful implementation of electronic health records as highlighted by Russel (2011) are:

- a. Assess your institution's readiness
- b. Justify why implementing electronic health records?
- c. Assess your current practice
- d. Envision the future
- e. Set goals and objectives
- f. Training and implementation of electronic health records
- g. Pilot testing of the whole system is needed to familiarize the staff with new system and lodge complaint where necessary

#### **2.6. Benefits of Electronic Health Records**

Omole (2016) submits that electronic health records data can be created, managed and consulted by authorized providers and staff from across more than one health care organization.

Health care providers who use electronic health records report tangible improvements in their ability to make better decisions with more comprehensive information. Specific benefits of electronic health records to health care services are:

1. Accurate and complete information about a patient's health is guaranteed.
2. The ability to quickly provide care is assured.
3. The ability to better coordinate care is enhanced.
4. It reduces patient waiting time generally.
5. A way to share information with patients and their family/caregiver if need be, is provided.
6. It identifies patients who are due for preventive visit and screening.
7. It exposes those patients that has missed hospital appointment visit.
8. It also improve the overall quality of care in a practice

### **2.7. Applications Used in Implementing Electronics Health Records**

Application packages, such as multipurpose hospital information system (MPHIS), Microsoft Word, Microsoft Excel, District Health Information System – 2 (DHIS-2), Statistical Package for Social Sciences (SPSS), Electronic Coding Procedures and Instructions (ECPI), including storage devices like hard disc, CDROM, flash drive, network and internet services. Other applications include: Mhealth packages, document imaging system and epidemic outbreak tracking system etc.

### **2.8. Challenges of Electronics Health Records Implementation in Nigeria**

Popoola (2010) submits that poor perception of health records management practice, lack of improved health records planning and management practice, inadequate skilled manpower in information and communication technologies, and lack of mission oriented leadership with the right perception of health records as national health care resource are some of the limitations of electronic health records implementation in Nigeria.

Osundina (2014) identifies high starting cost, low budgetary allocation to health sector, epileptic power supply, network issues, inadequate skilled manpower and delay in data entries at the starting point as impediments to successful implementation of electronic health records.

Omole (2016) buttresses that unauthorized access, data corruption, destruction of backup, reduced productivity at the initial stage, staff retrenchment and unstable network availability may be experienced in the course of implementing electronic health records system in Nigeria

### **Materials and Methods**

Survey research method was used. Health Records Practitioners in the health Information management department of Obafemi Awolowo University Teaching Hospitals Complex Ile Ife

were used for the study. The instrument used for data collection was questionnaire. The instrument was administered to Health Records Practitioners who collected it. Administration and collection of the instrument lasted for three months. Retrieved data were analyzed and presented with the use of table, descriptive statistics of frequency count, percentage distribution and mean.

## Discussion of findings

### 4.0. Findings and Discussions

A total of ninety six (96) copies of questionnaire were administered to Health Records Practitioners in the health Information management department of Obafemi Awolowo University Teaching Hospitals Complex Ile Ife. Eighty four (84) copies were filled and returned; however, only eighty two (82) were found useful which represent 85.42% response rate of the total questionnaire.

#### 4.1. Profile of the Respondents

**Table 4.1: Showing socio-demographic profile of the respondents**

<b>Gender</b>	<b>Frequency</b>	<b>%</b>
Male	14	17
Female	68	83
<b>Total</b>	<b>82</b>	<b>100</b>
<b>Qualification</b>	<b>Frequency</b>	<b>%</b>
PD	41	50
HND	33	40.24
B.Sc.	5	6.10
M.HIM	3	3.66
PhD	0	0
<b>Total</b>	<b>82</b>	<b>100</b>
<b>Cadre</b>	<b>Frequency</b>	<b>%</b>
Officer	8	9.76
Sub-Officer	74	90.24
<b>Total</b>	<b>82</b>	<b>100</b>

The data analysis in table 4.1 reveals that; out of the total number of respondents, 14 (17%) were male and 33(83%) were female. This indicates that both sexes were represented in the study and that women are into health records management practice than men.

Educational Qualifications of the respondents in hierarchical order as indicated in Table 4.1 reveals that: PhD (0%), M.HIM were 3 (3.66%), B.Sc. were 5 (6.10%), HND were 33 (40.24%), and PD were 41 (50%) in the distribution. This showed that the respondents had the basic qualification as a professional in the field of health records management practice. This implies that they possessed adequate knowledge of the issues being investigated in the study.

Cadre of the respondents in hierarchical order as indicated in Table 4.1 reveals that: Officer Cadre were 8 (9.79%) while Sub-Officer Cadre were 74 (90.24%) in the distribution. Findings revealed that majority of the respondents were Sub-Officer Cadre. This implies that the respondents consist of experienced officers who always participate in decision making process concerning various issues of health records management practices in the studied area.

## 4.2. Answers to Research Questions

**Research Question 1: What are the benefits of electronic health records system in health care delivery system in Nigeria?**

**Table 4.2: Showing benefits of electronic health records system in health care delivery system in Nigeria**

S/N	Item	SD (%)	D (%)	A (%)	SA (%)	Mean	Std. Dev.
1	Accurate and complete information about a patient's health is guaranteed with EHR system	2 2.4	5 6.1	33 40.2	42 51.2	3.63	.695
2	EHR ensures ability to quickly provide care	1 1.3	7 8.5	31 37.8	43 52.4	3.62	.684
3	The ability to better coordinate care is enhanced through EHR system	1 1.3	5 6.1	45 54.9	31 37.8	3.56	.596
4	EHR, reduces patient waiting time generally	2 2.4	9 10.9	42 51.2	29 35.4	3.52	.644
5	EHR, is way to share information with patients and their family/caregiver if need be, is provided	3 3.7	7 8.5	43 52.4	29 35.4	3.49	.663
6	EHR, identifies patients who are due for preventive visit and screening	5 6.1	21 2.56	30 36.5	26 31.7	2.98	.537
7	EHR, exposes those patients that has missed hospital appointment visit	3 3.7	5 6.1	31 37.8	43 52.4	3.20	.753
8	EHR, also improve the overall quality of care in health care practices	2 2.4	7 8.5	33 40.3	40 48.8	3.53	.653

**Source: Field Survey, 2017**

**Average Score = 3.30**

**Overall Average Mean Score = 2.53**

**Key: SD = 1.00-1.49; D = 1.50-2.49; A = 2.50-3.49; SA = 3.50-4.00**

**Note: SD = Strongly Disagree; D = Disagree; A = Agree; Strongly Agree**

The result in Table 4.2 reveals that (using the mean), respondents strongly agreed that accurate and complete information about a patient's health is guaranteed with EHR system ( $x = 3.63$ ), the use of EHR system ensures ability to quickly provide care ( $x = 3.62$ ): The ability to better coordinate care is enhanced through EHR system ( $x = 3.56$ ), as EHR, reduces patient waiting time generally ( $x = 3.52$ ) which in turn facilitates way to share information with patients



and their family/caregiver if need be, is provided ( $x = 3.49$ ). It shows that EHR, exposes those patients that has missed hospital appointment visit ( $x = 3.20$ ), identifies patients who are due for preventive visit and screening ( $x = 2.98$ ) and improve the overall quality of care in health care practices ( $x = 3.53$ ). The overall average mean score ( $x = 2.53$ ) of the various parameters used in measuring the benefits of EHR established the agreement of the respondents to the immense benefit of EHR in health care delivery system in Nigeria.

**Research Question 2: What are the challenges of implementing electronic health records system in health care delivery system in Nigeria?**

**Table 4.3: Showing the challenges of implementing electronic health records system in health care delivery system in Nigeria**

S/N	Item	SD (%)	D (%)	A (%)	SA (%)	Mean	Std. Dev.
1	Poor perception of health records management practice	0	0	45 54.9	37 45.1	3.73	.426
2	Inadequate skilled manpower in information and communication technologies	0	7 8.5	21 25.6	54 65.9	3.62	.594
3	Lack of mission oriented leadership with the right perception of health records as national health care resource	1 1.3	5 6.1	55 67.1	21 25.6	3.46	.606
4	High starting cost of system's procurement and low budgetary allocation to health sector	2 2.4	9 10.9	41 50	30 36.6	3.20	.644
5	Epileptic power supply, network issues and delay in data entries at the starting point	0	0	47 57.3	35 42.7	3.69	.663
6	Unauthorized access, data corruption and destruction of backup	4 4.9	11 13.4	42 51.2	25 30.4	3.10	.537
7	Reduced productivity at the initial stage, staff retrenchment and unstable network availability	38 46.3	25 30.4	11 13.4	8 9.8	2.46	.883

**Source: Field Survey, 2017**

**Average Score = 3.10**

**Overall Average Mean Score = 3.32**

**Key: SD = 1.00-1.49; D = 1.50-2.49; A = 2.50-3.49; SA = 3.50-4.00**

**Note: SD = Strongly Disagree; D = Disagree; A = Agree; Strongly Agree**

Findings in Table 4.3 shows that (using the mean) respondents strongly agreed that poor perception of health records management practice ( $x = 3.73$ ), inadequate skilled manpower in information and communication technologies ( $x = 3.62$ ), including lack of mission oriented leadership with the right perception of health records as national health care resource ( $x = 3.46$ ), high starting cost of system's procurement and low budgetary allocation to health sector ( $x = 3.20$ ), epileptic power supply, network issues and delay in data entries at the starting point ( $x = 3.69$ ), Unauthorized access, data corruption and destruction of backup ( $x = 3.10$ ) are the major challenges of implementing electronic health records system in health care delivery system in Nigeria. Nevertheless, respondents show low indication for fear of reduced productivity at the initial stage, staff retrenchment and unstable network availability ( $x = 2.46$ ). The overall average mean score ( $x = 3.32$ ) of the various parameters used in measuring the challenges of

implementing EHR system established the agreement of the respondents to the identified challenges as impediments against successful implementation of EHR in health care delivery system in Nigeria

### **Summary of Findings**

Major findings of the study are outlined below:

1. Findings revealed the immense benefits of EHR in health care delivery system in Nigeria. The result showed that, accurate and complete information about a patient's health is guaranteed, the ability to better coordinate care is enhanced and EHR improve the overall quality of care in health care practices
2. The result identified various challenges that constitute impediments against successful implementation of EHR system in health care delivery system in Nigeria, among these are; epileptic power supply, network issues and delay in data entries at the starting point.

### **Conclusion**

Effectiveness of health care delivery system depends on the extent to which electronic health records systems are taken seriously by health care professionals in various health institutions, so as to promote a sense of order because systematic arrangement of health records facilitates easy retrieval of health information for improved health care service delivery.

- Therefore government at all levels are advised to give maximum support and required encouragement to the implementation of electronic health records systems so as to ensure availability of accurate health data and information for action towards ensuring quality health care services in Nigeria.

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