

The Role of Information System Management and Quality in Securing Data; EPR as a Case Study

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Abstract

The ongoing development nature in the electronic networks and computer industries has helped us enormously to enter, process, save, and transmit data electronically. Yet, information security has always been a very critical issue in the realm of information system management. Information security in the electronic patient records is implicated in information ethical issues. The paper highlights some problems related to data protection, implications of EPR, and the role played by the information management system and quality. Although the solutions to the problem of data security are not merely technical (Von Solms and Von Solms 2004), this paper will shed the light on some technical solutions that help to secure the data in the electronic patient records.

Introduction

Electronic patient record means an electronic record which holds all the necessary information about the patients along with their health record and history (Mennerat 2002). Earlier, the patients' records were kept in hard copies; a time taking process. However, with the help of electronic system, the patients' records have become more easily accessible (ibid). This electronic record has the advantage of benefiting the patients by speeding up the communication, reducing the chances of mistakes and providing help to the doctors for effective and timely treatment. Moreover, it is a cost-saving method which benefits both the clients and the doctors (Black 2003). It reduces the tension related to the misplacement of the file. It also helps to maintain the record easily accessible for the all professionals at the hospital at the same moment. What is more, even if the doctor is not present, the required medication can be provided. Electronic patient record aims to make the system more clear, transparent and easy to understand.

Just like the two sides of the coin, every concept can have two sides; positive and negative. Electronic patient record is not an exception; it definitely has advantages and disadvantages. A major question that arises is related to authentication and security (Mennerat 2002). If the data entered by the doctor is accessible by all, there is an issue of reliability on the information stored. In other words, the data being accessed by many people, modifications to the data can be easily made. Although the similar

consequence is also possible in the case of hard copies, but the chances of occurrence of such activities are higher in the case of electronic records without even knowing who had made it (ibid). Another drawback is related to accessibility. That is, while the hard copies of medical records may be accessed any time, electricity can be a real obstacle if it is not available. Though there are some disadvantages, the advantages overpower them.

Background of EPR

The concept of EPR is not new, but it goes to the decade of 1960s (The McGraw-Hill Companies 2011). With the increase in the complication in the medical science and its requirements, the need for this system was felt in order to strengthen the records system. The doctors also felt a need to access the complete medication history to provide the treatment, which was not accessible to them. With the complexity, there raised the need of electronic storage and transfer of the medical records which brought the electronic record system into picture (ibid). The main aim behind the introduction of the EPR was to improve the patients' health and to provide the right medications. Though the concept was introduced and used in the early sixties, but since then, there have been continuous improvements to make the system better, easy to understand and transparent. Advances in the IT industry seems to have helped in the integration of IT with information management in the medical field (Olsen 1995). Even the academic and research institutions have been making continuous development to track the patient treatment. The basic motive to use the computers was to make the system for patient care better and to increase the quality of health care and its functionality (ibid).

1. Importance of Electronic Patient Record

As I have briefly mentioned in the introduction, electronic patient record is very useful for the health organization. It helps to increase the efficiency of the records as there are more chances of making mistakes when things are made manually compared to the computerized records (Mandl, Szolovits et al. 2001). All the important medical information is easily accessible whether related to the patient's history, medical procedures, and admissions or to medications. This ease of accessibility saves time as the time allotted to every patient is likely to get shorter. Moreover, with the help of electronic patient records the doctor can read all the required information while in the traditional patient record system it may take hours to find important information recorded in the past. Furthermore, in cases of emergency when a single quick response makes difference, electronic records prove to be functional and efficient (Erstad 2003). Therefore, these records are most helpful at the time of natural calamities as they provide faster medication and help to cure more number of people at a faster speed. Along with this, they help to meet the medical requirements in an appropriate fast manner. In addition, the electronic records are of an easily transferable nature; they can be easily transferred from one doctor to another. In the past, a doctor may struggle to find a medical file for a patient who has recently been seen by another physician. What is more, different medical professionals can work on the same patient record simultaneously (ibid).

It also helps in simplifying the workload of the patients, as they do not have to fill in or tell their clinical history every time they see the doctor. Electronic records help to provide the required medications after analysing the history of the drugs that have been previously prescribed to patient, and consequently they minimize the problems that may arise because of wrong medications. Electronic record system helps to properly document the information of the patient and transport communications about the health issues. Along with this, the EPR also enables the patient to keep a detailed record of his or her own health. Furthermore, advantages of EPR include workflow benefits. The task of making medical referrals is made easier and more simplified. In addition, laboratory test are easier to order. This is felt by doctors, nurses, and all the other medical professionals involved in the medical process (Hertzum and Simonsen 2008). In a study conducted in a medical unit in Denmark revealed that doctors have found it clearer to make work tasks while nurses have experienced less missing pieces of medical information (ibid). Moreover, with the help of online records, the order for the tests can be made online, and all the more, results and reports may be accessed online which saves a lot of time.

Also, one common problem is that hand written prescriptions can get difficult to understand and because of which there may be confusion and wrong medicine may be dispensed to patients; but with the help of EPR, there is no such problem (Busch 2008). With the help of EPR, the doctor knows the complete medical history of his patient because of which he is able to analyze the drug that is to be prescribed to the patient (ibid).

Along with all the above, the electronic record helps to minimize cost (Pearce and Haikerwal 2010), and with the use of it, there is a decrease in the workplace inefficiencies as the work becomes more effective (Beuscart-Zéphir, Anceaux et al. 2001). Electronic records have higher storage capacity which can last for long periods of time. Such records also help to provide the medical alerts and reminders to remind the patients about their regular medications (ibid). The electronic record system also enables an integrated view on the clinical recommendations. Along with this, the records help to provide a customized piece of information as required by the patient or the doctor which saves the time too (Hertzum and Simonsen 2008). From the discussion, it is quite clear that the electronic patients' records are very helpful and efficient. With such a number of advantages, every health organization should use them in order to simplify their work and produce far better and effective results (ibid).

Main problems of Electronic Patient Record

Like any other concept or idea, EPR does have drawbacks. Among the potential problems which one may experience in EPR is typo errors. Health professional are more likely to make spelling mistakes in data entry. Such a case is less likely to occur in the traditional methods of patient records. If this happens, real dire consequences may happen such as misdiagnosis or giving wrong treatment. However, if health professionals adopt a careful manner when dealing with the data and try to double check data which looks suspicious, such a problem may not be as consequential.

Another major problems related to the electronic patient records is data protection. The data that is stored in the records sometimes lacks the required protection. The data is accessible to all raising the

question on security and privacy of the data (Hippisley-Cox, Pringle et al. 2003). This data can be used for marketing purposes and in some cases it could be used for personal purposes. Yet, the concern for data protection might be at the minimal for the authorities. The unprotected data leads to leakage of the patients' personal records and information (ibid). This is the major concern of the users of the electronic record system. The question is related to the privacy about their health records. The use of electronic records system has increased the chances of misuse of the clinical records (Layman 2008). The misuse is so high that the companies even sell the data to the other hospitals or to medical insurance companies. It is an ethical concern to the protection of the data. It is unethical to leak the patients' information for commercial purposes or without the client's consent. The patients' records in the electronic form should be highly confidential and only authorized person should have access to them (ibid).

The patients' data should be collected and stored in computerized records and medical professionals should be able to have an access to these records. The use of the data should only be for the clinical purposes and the misuse of data should be strictly prohibited (Adams, Budden et al. 2004). The patients should be legally made aware of this process of electronically storing their records and only after the consent of the patient this type of clinical records should be made (ibid). It is unethical for the hospitals and doctors to get engaged in these types of unethical activities. They should be professionally trustworthy and should avoid any misuse of the personal information of the patient. The authorized people should show concerns to avoid any misuse of the stored data (De Clercq 2008). Currently, there seems to be no enough security barriers that help to prevent such unethical activities. The concept of data was proposed earlier, but these days many health care units have actually started using it. Still, the main question related to the data protection is unresolved (ibid).

Role of Information Management System and Quality

There are some major general principles that should be considered in EPR: confidentiality, control, integrity, legal value, responsibility, trust, and ethicality (Dhillon and Backhouse 2000; Wainer, Campos et al. 2008). EPRs are like the traditional records; they should be private and confidential where only authorised professionals may have access to them. Moreover, the patient being the heart of the process should be able to control the access to his or her records. Nonetheless, provided that patients' lives may be affected, only authorised professionals should have access to enter or modify the patients' data. EPRs are also of legal value; they should always be complete and not to be altered (Wainer, Campos et al. 2008). Health professionals should also be professionally aware of their responsibilities. Their work practices should reflect their roles in the medical process (Dhillon and Backhouse 2000). There should also be trust in those who are involved with the EPR data. They should be trusted to work according to their job description but should maintain an acceptable level of ethicality and confidentiality (ibid). These principles need to have a clear management strategy in order to assure that they are not violated.

Management seems to play a crucial role in helping electronic patient records overcome their limitations. Pearce and Haikerwal (2010) admit that uncoordinated implementation of incompatible

information systems calls for more efforts towards national coordination between health organisations. However, since easy accessibility to the information has made it vulnerable, there is a dire need to make the electronic patient records more secure (Wendt, Haber et al. 2004). Information technologies can contribute to update and automate the electronic record system (ibid). With the use of the information management system and a proper database, a great number of the problems related to electronic record system can be solved.

A number of health information technologies which are developed to handle the limitations of the EPR (Locatelli, Restifo et al. 2010). These technologies will help in maintaining the security and privacy of the data that is stored in these records. For example, the radio frequency identification (RFID) technology has been increasingly used for adding intelligence and minimizing human intervention (Azevedo and Ferreira 2010). In addition to this technology, hospitals and doctors can use credentials such as login IDs in order to protect and secure the data. Information technology departments should provide unique login IDs that can be used for the purpose of accessing the patients' information. The login passwords will restrict the access to these records and will also help in minimizing the misuse of the personal data. Along with this, other technologies such as finger touch logins can also act as security barriers as the access to the records will be allowed only if the finger prints match.

Moreover, another technology has also been used recently: patient smart cards. These cards offer timely, reliable and complete information (Smith and Eloff 1999). It takes the form of a chip card that contains a microprocessor and a storage capacity of a lifetime patient health record (ibid).

Quality is one of the main motives behind the use of electronic patient records. It aims to improve quality at every step of the health care facilities. There is a need for improvement in the quality of health care facility at various levels; namely doctor's level, hospital's level, and the patient's level (Stafford, Middleton et al. 2007). At the doctor's level, the EPR enables the doctor to have the complete background of the medical history of the patient on the basis of which he is able to provide the best medication to the patient for fast recovery. At the hospital's level, it gives complete access to all the records of the patients 24*7, so that even in the absence of the doctor, the patient is provided with the required medicines and treatment. At the patient's level, the electronic patient-records provide the patient with the records of his medications which are easily accessible for the patient. He or she can view his medications as and when required and accordingly work upon his problems. This works very efficiently for patients who travel regularly.

Conclusion

From the above discussion, it is quite clear that the electronic patient record is very helpful software developed to keep a complete clinical record of the patients. The use of EPR began in 1960 and since then continuous modifications have been made to improve the system. The basic purpose of these records is to enable easy storage of the records, and along with this, it is very helpful for the transfer of the clinical records when required by the patient. It can be accessed anywhere by the patients as per

their suitability. EPR has played a very important role in easy handling of issues related to the health. It facilitates financial, environmental and organizational benefits.

The paper has also highlighted that there is a need to improve the storage facility of the data that is stored in these electronic records. The security and privacy issues are not getting the required attention. The information management system and quality has played a very important role for the improvement of the electronic records of the patients. I have highlighted the importance of the use of modern technology to make betterment in the health facilities such as credential and finger touch technology systems. Use of credential technologies will enable the access of authorized persons only to the data that is there in the records. It is very important that the data is used only for medical purposes and not misused for any other purposes. EPRs have been very helpful in delivering timely and adequate medications to the clients. The quality has been the major concern of the organizations that have been using EPR. Continuous modifications have been done to make the overall system a better and stronger one, and further steps are being taken by the health authorities in order to make the more and more out of EPR.

There is a need to have a strong management team in order to ensure that the software is high in quality and that there is full set of security and privacy measures of the data that is stored in these records. There is also a need to increase the use of EPR in order to improve the health facilities. In the above paper, all these concepts are discussed in detail and efforts have been made to do full justice to the topic.

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