

**Education-Family Physician Corner****Electronic Health Records in Primary Care: Are We Ready?**

Amani Al Hajeri, MD, CABFM, IBFM, MSc MG\*

As the electronic evolution continues, it is expected from the health sector to move into the electronic world. Despite the call for “going electronic”, the conversion has only taken place in a small portion of health entities. Why does the process seem daunting? This is what I will try to answer in this review article.

**Definition and Terms**

Many terms are used interchangeably in this context. However, the meaning is different. These are: electronic health record (EHR), EMR (electronic medical record), and electronic personal health record (EPR). EHR is the data generated and maintained within a health institution, such as a hospital, integrated delivery network, clinic or physician office, to give patients, physicians and other health care providers, employers, and payers or insurers access to a patient's medical records across the facilities<sup>1</sup>. The EMR can be defined as the legal patient record created in hospitals and ambulatory environments (data source for the EHR)<sup>1</sup>. Recently individual patient can actively control his record in what is called electronic personal health record (EPR).

**History of Electronic Health Record**

Ever since the introduction of computers in the health care system, doctors always dreamed of having a software that could save their time and effort which otherwise would have been spent on writing and meticulously reviewing detailed patients' health records. Doctors would be surprised to know that electronic health record (EHR) were first suggested in 1960 by a physician named Lawrence L. Weed who described the concept of computerized medical records<sup>2</sup>. In the 1960s, the Mayo Clinic started developing electronic medical record systems. A collaborative effort between physicians and information technologists started in 1967 to invent an electronic medical record system (the PROMIS project) at the University of Vermont<sup>2</sup>.

In 1970s and 1980s, many electronic medical record systems have been developed; however, most health authorities were reluctant to giveaway the paper recordkeeping.

Nowadays, with the advances in technology, these computer programs became increasingly sophisticated and their use became wider among doctors and health systems.

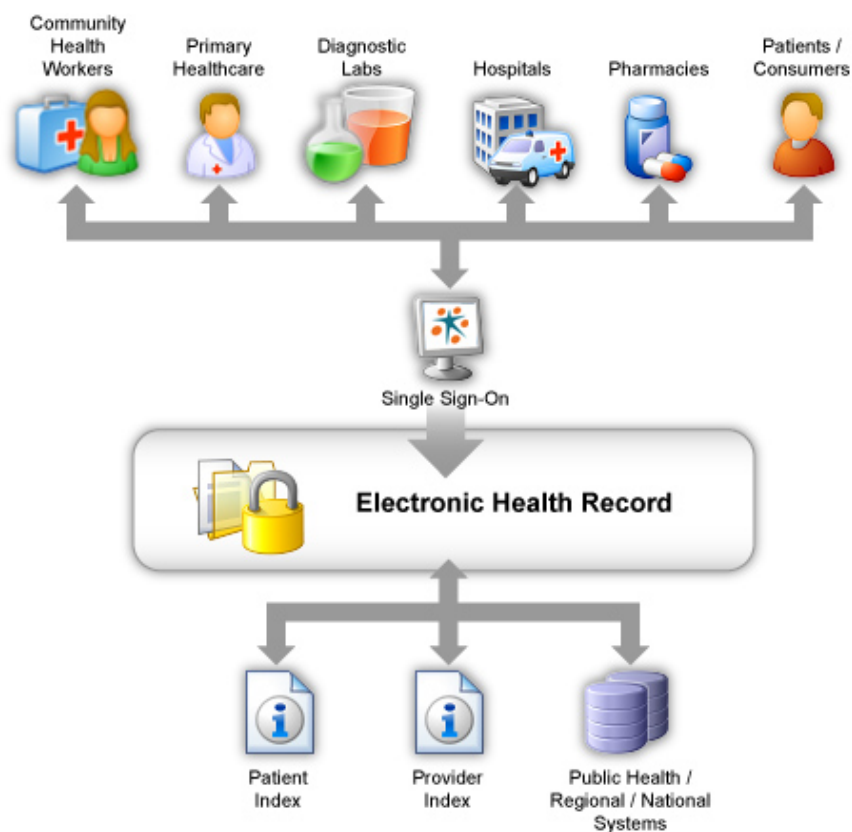
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\* Primary Care Consultant and Consultant Clinical Geneticist  
Genetic Department  
Salmaniya Medical Complex  
Kingdom of Bahrain  
Email: alhajeriamani@gmail.com

## Electronic Health Record in Primary Care

Doctors in general are increasingly facing difficulty in handling and processing the huge amount of clinical data for each and every patient they encounter. Primary care doctors are challenged with further amount of data emerging from the wider scope of their specialty. Many studies showed that primary care doctors cannot perfectly meet all the necessary needs in one setting<sup>3,4</sup>. Needless to say, it is almost impossible for the human mind to cope with the new advances in medicine imposing the ultimate need for some kind of electronic support.

It is the primary care doctors' duty to integrate all the necessary services for all patients' subgroups especially children, pregnant, lactating women and the elderly as these groups are heavily dependant on such service. Therefore implementing EHR in the primary care setting seems to be very appealing, see Figure 1.



**Figure 1: A Simplified Diagram Demonstrating Electronic Health Record System**

Taken from Orion (<http://www.orionhealth.com/uk/solutions/electronic-health-record>)

## Advantages of Implementing EHR in Primary Care

### Reducing Medical Error

EHR might reduce human error through helping doctors making a better clinical decision. Many clinical softwares not only provide a differential diagnosis for the presenting symptoms but also suggest the list of investigations and lead the doctor through a management algorithm. Therefore, it enables the doctor to take more accurate plan to manage the case. Doctors would be alerted to possible drug interactions and provided an access to the patient allergy record.

## **Integrating Evidence-Based Medicine**

If EHRs is linked with evidence-based medicine networks, it will provide primary care doctors with an easy access to tremendous amounts of clinical data supported with evidence. Not only for patients management but also for primary care based research.

### **Safe Storage**

EHR provides safe and life long storage when compared to paper records which are subjected to natural catastrophes such as fires, floods and insects. Loosing paper files between different clinics within the health facilities can also be prevented.

### **Cost and Time Reduction**

Obtaining patients' paper file takes time and money, especially, if files are located in multiple places. Lab results, X-rays films, clinical feedbacks and other relevant medical reports tend to get easily lost between different clerks and messengers. This problem would not exist if EHR is implemented.

### **Coordination between Different Health Providers**

Referrals from primary to secondary care and vice versa have always been problematic<sup>5</sup>. Implementing EHR will facilitate the coordination between different doctors. Letters and reports which may take several weeks to reach its destination will be instant. Therefore, time will be saved and patients' potential hassle will be avoided leading to a proper management.

## **Disadvantages**

### **Costs**

While I have pointed that EHRs might save money, critics argue that the systems cost much more! It is well known that the price vary according to how sophisticated the system is and how many doctors will use it. The price ranges between \$500 and \$6,000 per doctor and some systems may even cost more<sup>2</sup>.

### **Time**

Many doctors complain of the time wasted in entering the data in the new system which might reduce their productivity. However, once all the data gets installed updating them becomes an easy task. Unfortunately, to reach this stage tremendous time and effort need to be spent.

### **Privacy**

While paper records are subjected to security breaches, electronic records might even be worse, especially if the system is centralized such as the case in big hospitals or health centers, which are electronically interlinked. The bigger is the health entity the weaker is the privacy. In primary care, private clinic the case is different as only few people have an access to the electronic records.

## Related Issues

Before implementing an EHR system, one should consider the type of standards used such as ANSI X12, CEN's, ASTM etc, issues related to customizing the software according to the service provided, the long-term preservation, synchronization and storage of records.

Primary care doctors, whether working in a small private clinic or in a big health center interlinked with a national EHR system, might face several issues which need to be considered. For those who are running their own small clinics they need to consider a user friendly, fast and immediate EHR system. Those working in urban cities or large health centers should not worry about the cost or the sophisticated nature of the EHR system. As the cost will be covered by the health entity and the necessary training, maintenance and technical support will also be provided. Primary care doctors in one study showed that EHRs did not increase or decrease patient throughput<sup>6</sup>. Therefore, some critics still doubt the claimed improvement of quality<sup>2</sup>. However, a cost-benefit analysis showed that the implementation of an EHR system in primary care might result in a positive financial return<sup>7</sup>.

## CONCLUSION

**Despite the disadvantages and the critics' skeptical comments, doctors in primary care may soon find themselves not relying solely on their exhausted brains and their aged medical knowledge and expertise. Going electronic is inevitable it is just a matter of trying to have effective solutions to the high cost of EHRs and dealing with the privacy issues.**

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