



## Review Article

## Electronic health records: A general overview

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## ABSTRACT

Electronic Health Records (EHR) is a digital collection of patient health information in an electronic format. It is the need of the hour because it improves the quality and cost of health care, thus adopted by many developing countries. Despite of the positive effects of the EHR system in medical practices, the adoption rate in India is very slow, the main hurdle is clinicians. For successful adoption many steps have been initiated, and several new steps has to be taken. It requires a coordinated effort from all the stakeholders. Information technologies can be hazards so its security should be always concern. The purpose of this article is to increase awareness and valuable uses of EHR in health system.

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## 1. What is an EHR?

Electronic Health Records (EHR) is a digital collection of patient health information in an electronic format. EHR is increasingly being implemented in many developing countries. These records can be shared through well connected network across different

health care settings. EHR includes demographic and personal statistics like age, weight, and billing information as well as vital signs, previous and current medical history, family history, medication and allergies history, immunization status, laboratory test results, and radiology images. EHR systems are designed in such a way which reduces paper medical records to store data accurately and legible in a digital format. Digitally health records reduce the risk of data replication as file can be shared across the different health care systems and can be modify and update which reduce the risk of lost paperwork. EHR programs directly benefit the physicians, patients, and obviously the hospital management

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authority. EHR system can be beneficial in population based studies and effective when extracting medical data for the examination of possible trends and long term changes in a patient.

## 2. Global vs national scenario

### 2.1. Global scenario

- Canada launched an initiative in 2001 to modernize its health-care system. In 2015, EHRs were created for 91% of Canadians, and 91,000 clinicians were using EHR system successfully.<sup>1</sup>
- In 2001, England started a national initiative called the “National Plan for IT” (NPFIT) for modernizing its healthcare system. Under the initiative, 96% of the population covered by EHR system.<sup>2,3</sup>
- In Germany, about 90% of physicians in private practice are using EHR systems. Patient privacy has been given adequate attention in the initiative.<sup>4</sup>
- New Zealand has achieved an EHR adoption rate of 97%. At present, there is no central or single EHR system, but a distributed EHR system, which can be accessed from any entity across the nation. The country is aiming to have a single EHR system by mid-2018.<sup>5</sup>
- United States, 76% of civil hospitals and 97% of the acute care hospitals have adopted certified EHR systems by 2014.<sup>6</sup>

### 2.2. National scenario

India has a mixed healthcare system consisting of a large number of hospitals run by the Central Government and State Government as well as the private sector. Increased utilization of information technology (IT) in health settings is one of the key components of “digital India” initiative by Government of India. In year 2013 Indian Government has started initiative the use of information technology in health care system, and for that Ministry of Health and Family Welfare notified EHR standards for India.<sup>7</sup> There are big private organizations like Max, Apollo, Fortis, Sir Ganga Ram, and Sankara Nethralaya have been adopted electronic records while rest is still in the planning phase.<sup>8,9</sup> Government of India has increased its budgeted to \$19.2 billion to improve the health care system by using information technology.<sup>10,11</sup>

## 3. Benefits with EHR

EHR is a great tool to manage lengthy and labor-intensive paperwork more efficiently and thereby significantly reduce the cost of transcription, re-filing, and storage. EHR enables patient management with enhanced and accurate reimbursement coding. Since the software has all patient-related information it significantly reduces the occurrence of a medical error and also helps in the improvement of patient health with better management of the diseases. Here we discuss five important benefits of EMR vs. Paper Medical Records.

1. **Costs:** To start the EHR the initial costs is higher due to large and digitally setting of IT network but the costs over time will decrease significantly. While manually storage of paper records require more personnel to manage and maintain paper files, accesses and organize countless documents which increase cost substantially over the time. EHR can save man power, time and physical storage space which reduced the cost in long run.
2. **Storage:** Electronic health records can be stored in a secure cloud, providing easier access by those who need them, however paper medical records required large warehouses for storage. Paper records are not only taken up space, but they are not

environmentally friendly and tend to decay, when handled by many individuals over time, which increased the cost of storage.

3. **Security:** Security is a great concern for both paper and electronic storage system; both are equally susceptible to security threats. If a facility stores records electronically without proper and effective security systems they are vulnerable to access by unauthorized individuals which can be misuse the information. If records are stored in paper form, they can be lost or damage or stolen due to human error. Natural disaster such as a fire or flood also plays an important role in the concern the security of health records.
4. **Access:** Accessibility of electronic health records take clear advantage over paper health records. Digital health records allows healthcare professionals to access the information instantly, whenever and wherever they need almost, which makes healthcare professionals more efficient, however paper medical records to be shared with healthcare professional required physically provided to them or scanned and sent via email, it is a time-consuming which increase the cost.
5. **Readability and Accuracy:** Electronic health records are often written with the use of standardized abbreviations which make them more accurate and readable across the globe which decreased the chance for confusion however handwritten paper medical records may be poorly legible, which can contribute to medical errors. Paper medical records provide insufficient space for healthcare professionals to write all necessary information.

## 4. Better practice management with EHR

In terms of appointment management, EHR performs the excellent task. EHR improved medical practice management through integrated scheduling systems that link appointments directly to progress notes, automate coding, and manage claims. This platform smoothly handles queries about the patient condition and manages graphs, specific to each and every patient. A Report published by *Jamoom E. et al.*,<sup>12</sup> National conference on health statistics “claimed:

- 79% of EHR users practice functions more efficiently.
- 82% of EHR users save time while sending prescriptions electronically (e-prescribing).
- 75% of EHR users receive lab results faster than usual.

EHR enhanced communication with other multi-disciplinary physicians, laboratories, and between different hospitals which enables faster patient service. Since it's a digital platform with online connectivity doctors can access the patient information anytime anywhere and assigned task to support providers which includes labs, and other physicians.<sup>13</sup>

Follow checkups are often an integral part of better patient care; with EHR, automated checkups are easily scheduled by the electronic program. Since the program is integrated with test reports and images, timely access is readily enabled. Moreover, such test can be ordered through this multipurpose EHR system. Moreover, such system prevents unnecessary duplication of medical testing. The best part of such electronic records is that they are integrated with national and international disease database and registries. Thus, it helps the physicians track the epidemiological status of the current disease under treatment and be prepared for emergencies.

## 5. Better revenue management with EHR

EHR are equipped with the technology that enables the management track and efficiently channelize the revenue model

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