PATIENT MEDICAL INFORMATION SYSTEM

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Abstract: The main aim of computerized patient record (CPR) system is to empower the patient to access their own medical records. However, the medical information of an individual is obtained largely from clinical institutions, there is no way for them to control or maintain their own medical records. The patients should be able to manage their own medical information which may not be available in CPR. Personal medical history is one of the weakest parts of the current health care management system. Hence for these reasons, it is must to have an effective personal health record system (PHRS). This allows the patient to constantly maintain and control the personal health record. Here we propose a cloud-based CPR system that allows the patient to retrieve their own medical information whenever and wherever required. This retrieval of information is possible through a mobile device. This CPR system is helpful in the analysis of entire patient history which therefore places a major role in decision support system. We provide an easy uploading module to feed the information into the CPR system.

Index Terms: **QT Software, RFID Reader, Personal Computer, USB Connector.**

I. INTRODUCTION

As per the Office of the National Coordinator for the Health Information Technology (ONC), the use of electronic health record can be beneficial not only for clinical institutions but also for the public. Computerized patient record (CPR) receives the patient personal information such as admission number, name, age, gender, address, contact number. This is used to store both past and present medical history eventually. The computerized patient record is thus supportive for all activities and process involved in delivering clinical care. It is useful in the complete analysis of patient thereby, reducing the repeated examination of patient every time by the physicians. The computerized patient records payed a fruit full way for the CDS system to organize patient data into helpful information but the clinician can use to make evidence-based treatment planning decisions. In recent year, computerization of patient records has increased in a moderate rate however it faces many security crises. Thus, we provide betterment in CPR security by providing RF ID system. The entire patient information is feed into a globally linked cloud server. Thus, the medical history of the patient can be easily accessed.

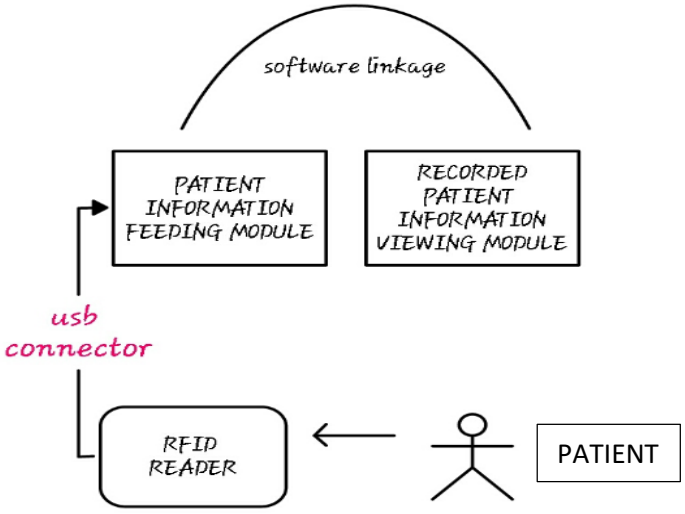

Fig 1. Block diagram of EHR system

II. ELECTRONIC PATIENT HEALTH RECORD

EHR is a systematic collection of patient health information in digital format. It is an electronic set of information about a single patient which doesn't necessarily restricted to a single clinical institution. The EPR is the system specifically proved patient record electronically which involves

- Access and control
- Security
- Authentication
- Data storage

- Archival
- Retrieval

This record includes medical records such as laboratory test result and personal statistics like age, weight, gender etc. the EHR is a set of elements that consist the mechanism by which patient records are created, stored, retrieve. For the past decade 9 out of 10 doctors in the U. S still updated patient record manually and storing them in colour coded files .The current adoption rate for EHR stands at 87%. EHR grant patient to access a wide range of health resources. By encountering medical conditions, we can develop better communication between patient and doctor.

2.1 Components of EHR

- Integrated view of patient data
- Clinical decision support system
- Clinician order entry
- Integrated communication and reporting support
- Access to knowledge resources

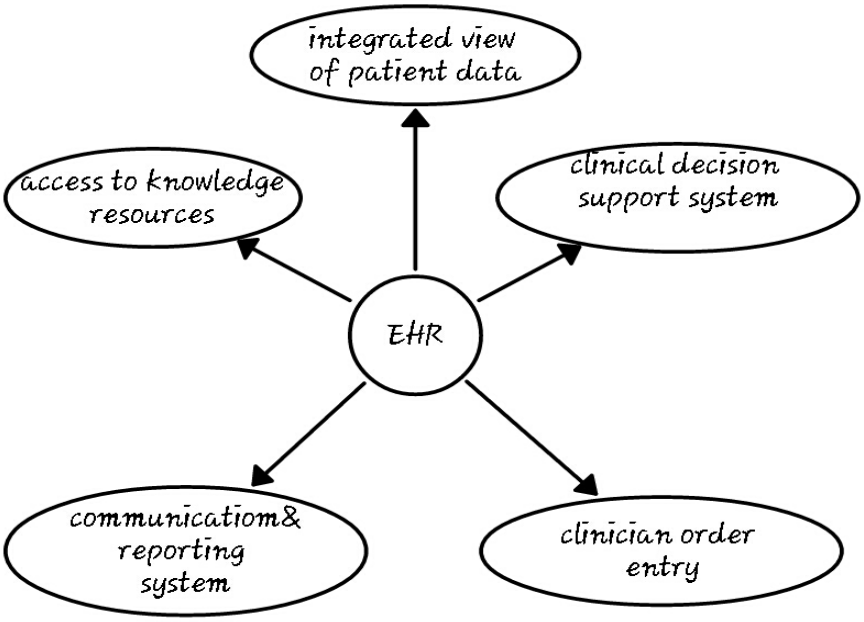

Fig 2. Components of EHR system

2.2 Features of EHR

a) Interoperability: It is the ability of communicating and exchanging the data accurately, effectively and consistently with the use of different information technology and software applications.
b) Privacy: A major concern is adequate confidentiality of individual records being managed electronically. Multiple access points over an open network like internet increases patient data interception.
c) Older record incorporation: To attain wide accessibility, efficiency, patient safety and cost savings promises by EPR. Older paper medical records ideally should be incorporated into patient's record. Digital scanning involved is time consuming and some content may be illegible after conversation.
d) Preservation: Under data protection legislation and law, the physical medical records are the property of the medical provider facility. The patient has a right of view for the original records and obtains copies.
e) Customisation: Every medical practice has a different requirements system that need to be custom tailored as per health care service requirement.
f) Authentication: Using digital signature, data can be authenticated for those intended to use it.

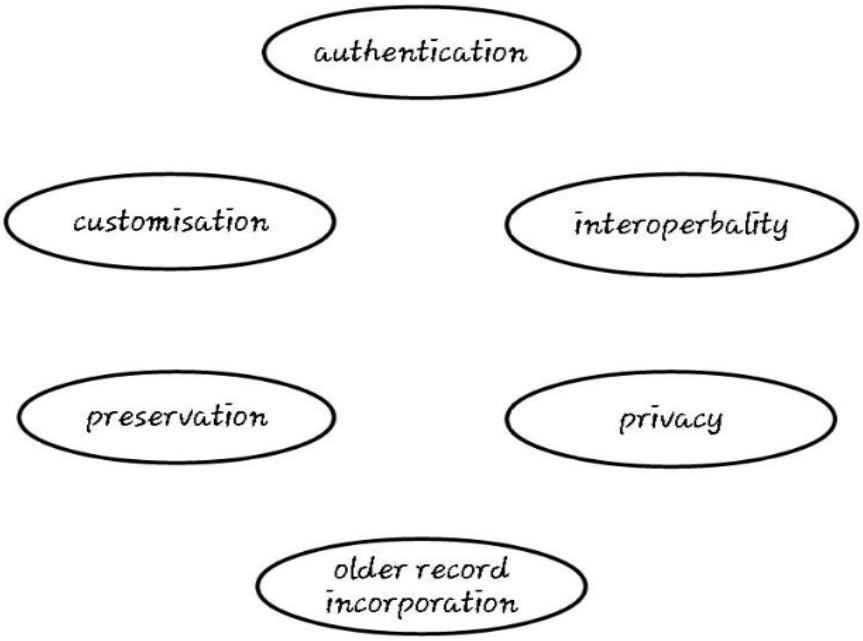

Fig 3. Features of EHR

III. SECURITY ISSUES

The patient information which is stored in CPR is susceptible to misuse and this may create a negative effect on the patients. When a CPR is used without a well-defined security, patient will lose their trust on the healthcare. Thus, we provide a security system for protecting the patient's information through RFID. This RFID creates a unique identity for each individual patient which is the latest technology used for theft detection system.

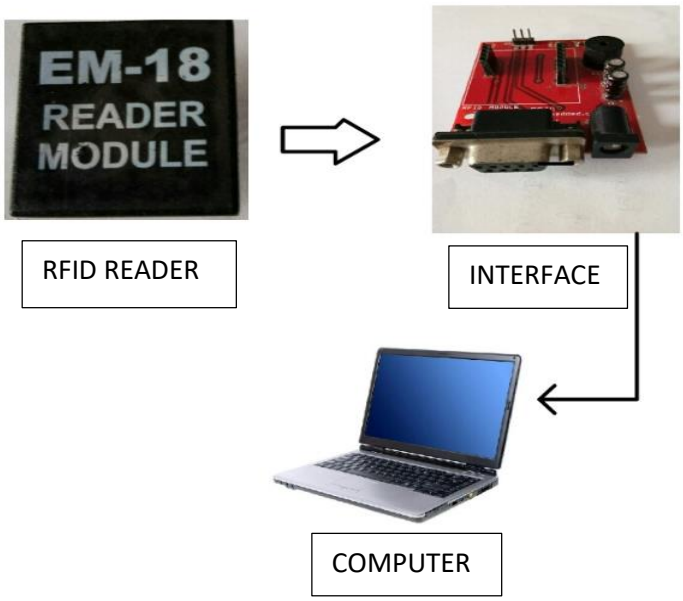

Fig 4. Detection and interface of RFID

IV.RFID READER

RFID is just a simple technology which consists of both radio frequency and microchip elements. The target used in RFID system can replace both Electro Mechanical (EM) and RF theft detection targets and barcodes. It is integrated circuit for modulating and demodulating radio signal. An RFID technology consist of three main key elements,

- RFID tag
- RFID reader
- Back-end data base

Each tag contains a unique identity code. The reader generally emits a low-level radio frequency magnetic field that energies the tag. The tag responds to the reader's query and announces its presence through radio waves, transmitting its unique identification data. This data is decoded by the reader and passed to the local application system via middleware. The middleware acts as an interface between the reader and RFID application system. The system search and match the identity code with the information stored in the host database. In this way, accessibility or authorisation for further processing can be done depending on the result received by the reader and processed by the database.

Fig 5. RFID TAG

V. GRAPHICAL USER INTERFACE (GUI)

This GUI allows the user to interact with the electronic device through graphical icons and visual indicators. This GUI demonstrates some basic image processing functionalities. For example, colour filtering, motion filtering. The user can upload any kind of basic image file types and then generate a secondary image based on the provided functionalities.

VI. CLOUD

The health record is used for communication in clinical decision making. Patient security and confidentiality is considered as old as medicine itself; privacy is more important when it comes to medical records. Digital technology has changed our world. The electronic gadgets such as tablets, smartphone and web enabled devices have changed our daily lives through the communication. It is important to make a balance sensibly between innovation and patient privacy. It is necessary for a healthcare organization to keep Patient records safe from the hackers. On the safer sides it is a good idea to make the information has encrypt the before uploading. When we want to send a data, it should be a encrypt data which has to be decrypted using a key. It is easy to store a large number of data into the cloud than a physical storage and no need of memory space. It is a standard agreement between the storage provider and health care provider. If the provider wants to end the agreement one of the best cloud solution are vendor-neutral. The encrypted data is stored in its original format for easy download and use at any time. Cyber security is necessary to make a patient data safer. The cloud storage providers are responsible for keeping the data available, accessible and protective.

VII. RESULT

Thus, we propose an idea to make betterment in Hospital Information System (HIS) by taking it to another level in Electronic Health Record (EHR) system. We provide an additional security system to this by the way of RFID reader which can be further modified in the future by replacing it with other advanced features. By feeding the system in the cloud we can connect the people and doctor's globally. Thus, information can be utilized whenever and wherever as required.

VIII. CONCLUSION

In this paper, we proposed an Electronic Patient Health Record system to maintain and control the personal health record of patients. This EHR system holds great promise for improved patient care. As it is electronic based system, people use this system more and it has more benefits. As a common thing it has both boon and bane. Thus, we are introducing a security system RFID. In this we can insert the patient data and it is maintained safely. And we can insert the images through GUI method. This allows user to interact with the electronic devices through graphical icons. This will reduce long term texting format in the hospitals. But the only drawback of GUI is it is used only in a specific place which are restricted for patients. So, now here we are introducing a cloud which is used to store all this information. This can be used by people in their mobiles whenever and wherever they required.

IX. ACKNOWLEDGEMENT

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