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# QR Based Patient Health Record System with Disease Prediction

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**ABSTRACT:** The Health Transformation Program reform platform, with its motto of “People First,” has been a major contributor to this successful improvement. The health care delivery system is hierarchical and patient transfer from the lower level to the next higher level health care facility involves patients carrying their physical medical record card. A medical record card holds information pertaining to the patient’s medical history, pre-existing allergies, medical health conditions, prescribed medication the patient is currently taking among other details. In this paper, we propose the application of Quick Response (QR) codes to secure and transmit this sensitive patient information from one level of the health care delivery system to another. Recording such patient information on a medical health card renders it susceptible to tempering, loss, and misinterpretation as well as susceptible to breaches in confidentiality.

**KEYWORDS:** Patient Health Record, QR code, Android Application, Disease Prediction, Symptoms

## I. INTRODUCTION

The inability to properly coordinate care of a patient has resulted in hospital readmissions, higher medical cost, and lower qualities of care. The two main aspects of properly coordinating care involve the ability to communicate with various parties and the ability to share accurate data. Healthcare providers today can be seen to coordinate care with the use of shared data sources, phone calls, faxes, postal mail delivery, or text messaging. These existing solutions do not accurately support the proper platform needed to properly coordinate care. For example, phone calls can be challenging in order to communicate with healthcare providers due to wait times, incorrect resources being reached or miscommunication over a weak line. In this project we seek to improve care coordination by implementing a mobile messaging application equipped with QR code technology.

A QR code is a machine-readable barcode used in the application of product tracking, marketing, document management, item identification and more. The benefits include efficiency in storing data, greater data storage, and quick readability. An implementation of QR code technology which can be used to store general medical data and be scanned to display the general medical data to improve the coordination of care is presented.

Due to time sensitive circumstances, the goal of this project is limited to a completed implementation and a plan for future beta testing. This project will implement a mobile application utilizing QR code technology to store and read general medical data. Along with the implementation of this project, a plan for future beta testing will be structured to verify the application’s proof of concept. QR Codes in hospital and healthcare industry marketing can prove extremely beneficial for both patients and healthcare providers, in terms of communicating and providing treatment. Smartphones have improved convenience and speed, especially after the advent of tech-enabled services, such as online doctor appointment apps, patient management platforms, EHR, AI-based gadgets, and so on. QR Codes technology, although, has been around for over 20 years now in the form of 2-D barcodes, the concept is relatively new in the healthcare industry. It is not because the healthcare industry is not advancing in treatment and technology, but it is because smartphones have become main stream in healthcare only recently.

## PROBLEMDEFINITION AND OBJECTIVE

In early period the reports and the records of the patients were maintained through hands and the records were also saved in the draws and also in rooms, and because of this the chances of losing data becomes very high. After this period passes a modern era of computers were introduced and many management system were introduced in market to reduce the hand work, and to make or maintain all the records using computers, because of this the things started getting easy to manage. Traditionally, healthcare systems have always been developed as soloed architectures. Patient data in one system or one department may not exist in another system or department.



If we want to check a previous record of a patient or other detail. Management will be in a great problem. It's a tough and time taking process to search for a record in a file. Keeping files takes much time and waste much precious man hours. The scope of SRS is basically for everyone involved to understand and have an idea about how and what is going to happen in the system.

## II. RELATED WORK

In recent years citizens' level of health has clearly increased. The Health Transformation Program reform platform, with its motto of "People First," has been a major contributor to this successful improvement. The Turkish government is now putting the second phase of this program into action to enhance governance, efficiency, and quality in the health sector. As part of the health reforms, legal changes have been made within the Ministry of Health such as restructuring and reorganization of its units and affiliates. The restructuring efforts strive to empower the management function and improve its health system policy development, planning, supervision, monitoring, and evaluation. To reinforce the position in healthcare service provision the Public Health Institution has been created.

Patient identification is widely seen as addressable by solutions and as a necessary and vital element of healthcare and patient safety. When patient identification instructions are followed the underlying methods are capable of preventing many errors and undesired consequences at various steps of healthcare provision.1 Patient identification is still performed manually by many public healthcare providers. This method of patient identification should be replaced, because it is very likely to lead to anthropogenic errors. Identification errors can lead to severe problems with medical procedures, such as medication administration, blood transfusions, clinical trials, and surgery.

The most significant advantage of QR code utilization for patient identification originates from its simple technological base QR code-based technology provides high ease of access for users because it requires no special tags (such as RF tags). QR codes are created very easily, and because they can be printed on any surface (e.g. paper or plastic labels or any other surface), they do not require any equipment more specialized than a printer.

Smartphones are widely used across various life domains, reading and decoding QR codes has become much easier than using systems based on complex technology. A QR code system has another advantage over RFID-based systems because reading QR codes requires closer proximity, it is almost impossible to read an undesired code. From this perspective, QR code reading is unambiguous, as it only requires close proximity of the reader device to the patient's bracelet to read the code. QR code-based technology is also superior in other ways, such as higher data storage capacity, lower implementation cost, technical simplicity, widespread use, and widely available, free programs for reading and decoding by camera-equipped smartphones. These features make this technology attractive for patient identification purposes, especially for institutions in developing countries with limited sources.

## III. PROPOSED METHODOLOGY

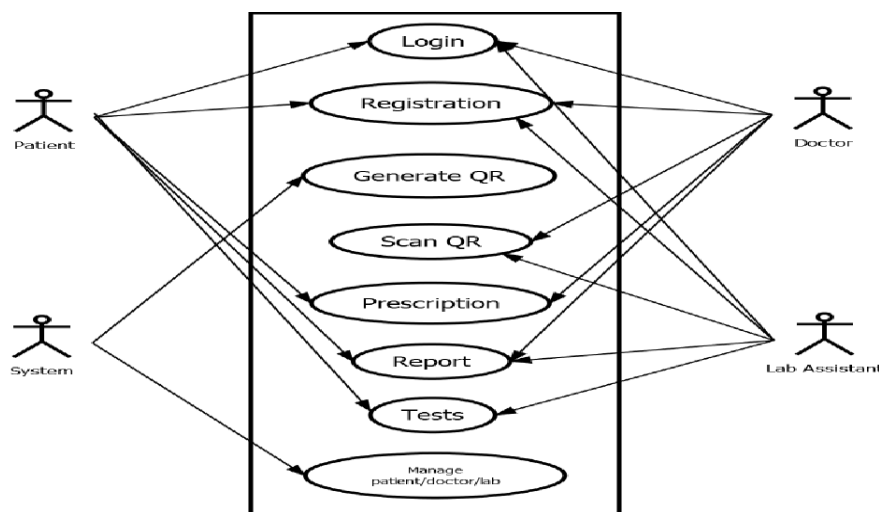


Fig 1. Proposed System Architecture

The users of this application locker are patient, doctors, and lab assistants. Each one of them will be provided with unique login ID after the registration. The QR code will be generated when the patient will register into the application. The patient can further view, delete, and download its data. The doctor is supposed to scan this QR code in order to access the report of patient. He can update, view, send prescription, and delete any data of the patient. The lab assistant is supposed to scan this QR code in order to access the report of patient. He can update, view, send prescription, and delete any data of the patient. After work done the user may logout of the application.

#### IV. WORKING MODULE

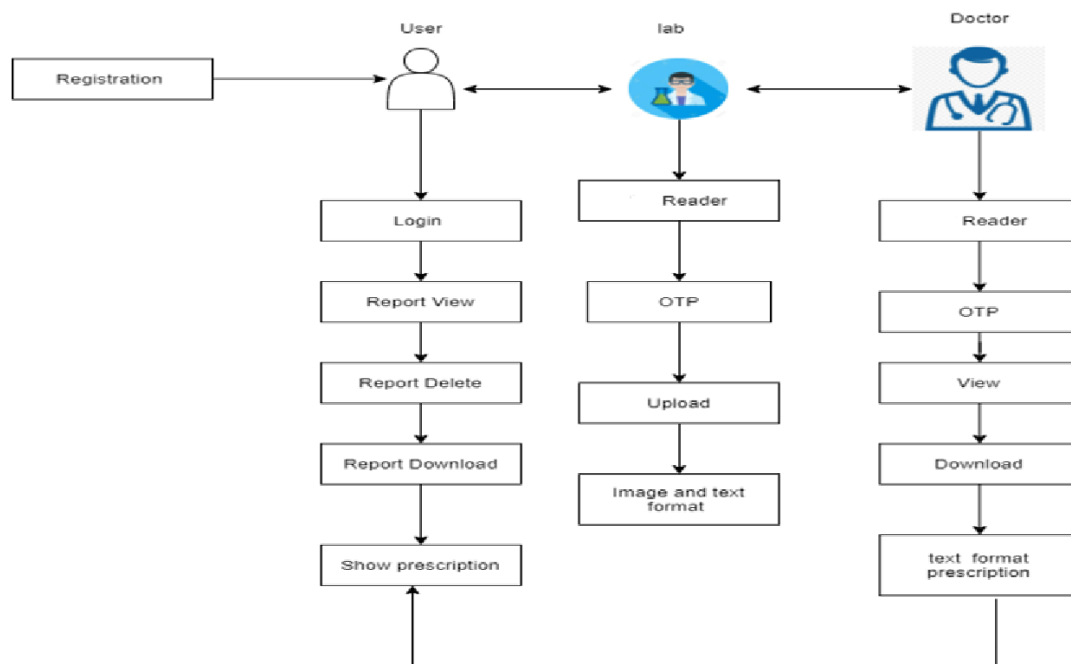


Fig 2. System Module

The implementation of our system are as follows:

- Install flutter application
- Design login registration page for patient, doctor and lab assistance
- Create code for QR code generation on the basis of registration data
- Create code for QR scanner
- Provide test check box
- Add text field for prescription
- Add update download report function

#### V. CONCLUSION

This application will help in enhance the outdated filing system in hospitals and will provide security to our data. This application will help the doctors and nurses to manage and update data digitally through their mobile phones. This application will help the hospital staff to manage data properly on cloud and not to store hand written data in store rooms. Hence it is concluded that this application will not only help the hospital staff and doctors but also the patients because their data is now secure and is hard to delete. The data will also be very helpful in future for applying data science and machine learning algorithms on it. We are making a management system for hospitals which will be based on QR-Code. In this, QRCode will be used as a tag or an identification of the patient, through which the vast amount of information of the patient will be accessed on application which will be install on a mobile or tablet. The QR-code is used to scan the information of the patient when is required by using mobile or tablet's camera. We used QR-Code because it is cheap and fast.



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