

Creating a Modern Electronic Medical Records (EMR) System

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Abstract

This project will attempt to create a functional user-friendly, HIPAA-compliant medical management and medical records (EMR) system. Web-based programming languages, such as PHP, HTML, and CSS will be used with MySQL databases. A variety of security measures will be explored in order to meet government standards (HIPAA) and protect patient privacy.

Keywords: databases, encryption, security, HIPAA compliance, medical systems

1 Introduction

The business of medicine is a topic front and center for many Americans today. Beyond the question of health insurance reform, the United States government is in the process of changing the medical industry itself. Doctors have been given incentives to convert physical, paper charts to electronic ones in the near future. Soon after, physicians will be charged fees for using paper charts. These changes present a difficult situation for doctors. Despite the exorbitant costs of many preexisting Electronic Medical Records (EMR) systems, some popular systems use outdated programming techniques and languages, and are as a result unintuitive and low-featured. This project plans to remedy the situation by creating an EMR system designed in conjunction with physicians to ensure ease-of-use, using forward-thinking web-based languages, including PHP, HTML, CSS, and MySQL.

2 Background

Attempting a project of this scale is a difficult undertaking under any circumstances. The researcher's preexisting experience in programming and medical applications should make the task somewhat more reasonable. Prior to beginning this project, the researcher had a strong understanding of the PHP, HTML, and CSS, as well as basic experience with the MySQL and Javascript programming languages that will be used for this project. Within a few weeks, practical MySQL proficiency was cultivated through basic database work.

In order to meet medical security standards, the researcher examined HIPAA compliance for physicians and physicians's offices. Because this project primarily requires technological compliance with HIPAA regulations, an academic article specifically detailing security practices for HIPAA-compliant data transfer of EMR was studied.

3 Expected Procedure and Methodology

To program this EMR system, web-based languages, such as HTML, CSS, and Javascript (for the user interface) and PHP and MySQL (for database and other active-web functions) will be used for almost all aspects of the project. Initially, files will be located on a personal remote web server. However, the program will be transferred to a physical server as soon as possible in order to permit security testing to begin.

In order to test the EMR system, false data will initially be used for local testing by the researcher. This type of testing will be adequate for evaluating basic functionality of the program. For the program to be effectively tested for intuitive interface design, additional feature requests, and usability for large amounts of data, actual patient data must be used in the context of a physician's office. The researcher is currently approaching physicians to identify a suitable testing office. The EMR system functionality and user interface will be designed to best fit the needs of this office.

4 Expected Result and Value to Others

This project can be expected to yield a system for medical patient management, including the maintenance of electronic charts, as well as any other

important patient information. Methods of secure data transfer and integration may be pursued. If this project functions as desired, its value would be immense in a climate where doctors are converting paper charts to digital ones. In a current market where EMR systems with neither major technical prowess nor sufficient medical utility often cost five thousand to fifteen thousand dollars per physician, a new alternative developed in conjunction with physicians and using modern database technologies could have immense value.