Use of Wireless Technology for Reducing Medical Errors

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Introduction

We have established that inadequate access to timely information and ineffective communication among patient care team members are frequent events that are proximal causes of medical errors.[1] We are exploring the use of wireless mobile computing technology to help reduce these problems through extensions to the Web-based clinical information system at New York Presbyterian Hospital (NYPH).

Background

Currently, there are several wireless devices that allow Web browsing and e-mail messaging along with other features. The advantage of Palm devices over other personal digital assistants (PDA) is size and the enormous amount of software available for the Palm OS. Compared to cellular phones and alphanumeric pagers, the screen size makes them more readable and the input mechanism, more usable.

Palm, Inc. is the leading provider of handheld information management solutions, including the Palm V and Palm VII series of connected organizers.[2] Devices in both series are capable of providing wireless service.

The clinical information system at NYPH is organized in a way that enables clinical systems on disparate platforms to share patient data.[3] The architecture of the system consists of several layers of which the access layer is pertinent to our wireless extension. This layer carries out the retrieval transactions against the clinical repository, which is the central collection of all patient data at NYPH. These actions are performed by data access modules (DAMs) that were developed for the different transaction types.

Methodology

After studying the different features of the Palm V and Palm VII series, it was decided to utilize the Palm VIIx. With its integrated wireless modem, a Palm VII device along with Palm.Net wireless communication service can provide wireless access to network applications. The Palm VII series introduces web clipping architecture. This involves developing a client-side web clipping application (WCA) to be placed on the Palm device which can be used to interact with a specified content provider's Web site. A combination of Certicom's Elliptic Curve Cryptography (ECC) technology and the standard secure socket layer (SSL) protocol is used to achieve end-to-end encryption of data passed back and forth in web clipping transactions.[4]

The goal of the wireless extension to the current clinical information system at NYPH is to provide quick and convenient access to clinical information to health care workers. Development of the application requires implementation of a WCA for the Palm VIIx as well as programs on the server to retrieve data from the clinical repository and respond to queries from the Palm device.

The WCA has been constructed using HTML and consists of a simple form asking for a username and password. Upon submission, a CGI (Common Gateway Interface) script on our secure server verifies the user information and displays a list of the patients for that user. The user can then select the patients for whom they need data. Then, upon submission, a program on the secure server utilizing the DAMs will return the requested information.

Conclusion

With its wireless capabilities, the Palm VIIx provides a way to view clinical information in a secure, efficient and timely matter. Such access to data can potentially reduce medical errors.

References

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