

Electronic Health Records and Mobile Technology Use in Northwest Florida Medical Practices

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Abstract - *This paper describes the ongoing analysis of surveys and on-site visits to review the characteristics of EHR software and mobile technology used in selected rural hospitals, medical clinics, and practitioners in Northwest Florida. The paper follows up on previously published findings and compares the results to state-wide and nation-wide statistics for urban and rural practices.*

Keywords: Mobile Technology, EHR

1 Introduction

Even with its reputation as a technology innovator, the United States lags the rest of the world in the medical use of mobile technology and the use of Electronic Health Records (EHR). Researchers have found that 99% of the physicians in the Netherlands use EHRs, and the EHR adoption rate for Australia, Italy, Norway, Sweden, and the United Kingdom is 94% or higher. The U.S. adoption rate of 17% to 30% was only higher than that for Canada among the world's leading economies [1].

1.1 Rural Healthcare Characteristics

The quality of healthcare in rural areas of the United States has steadily declined over the past 25 years. The rural population of the U.S. represents about 25% of the total U.S. population, but only 10% of the total number of U.S. physicians practice in rural areas. In addition, rural areas of the U.S. have lost over 500 hospitals over the past 25 years through consolidation and economic hardships. Not only does this void result in reduced coverage and longer commutes for treatment, but it also reduces access to specialized treatment for rural citizens. Ironically, at a time when the use of mobile technology and the use of EHRs could help make up for these losses in rural coverage, the U.S. medical community still lags the world in such meaningful use [2].

2 How Mobile Technology Can Improve Rural Healthcare

It has been shown that mobile technology can improve the quality of rural healthcare. Mobile technology includes the use of portable computers, Personal Digital Assistants (PDAs), mobile phones and smart phones, global positioning system (GPS) devices, and other wireless hardware.

2.1 Examples of Mobile Technology Usage in Healthcare

Some medical applications of mobile technology include remote patient monitoring, remote diagnosis and treatment, on-site diagnosis and prescribing, physician, nurse, or hospital to patient communication, and online patient medical record storage and retrieval. For example, in a study in rural Washington State, nurse practitioners used PDAs loaded with a pharmacology program and medical decision making software. The PDAs provided access to medical information not normally available in such remote areas. The use of the PDAs was compared to traditional means with respect to participants' responses to ease and speed of access, speed of response, decreased need to use the Internet to seek clarification or to ask questions of others, increased understanding of their roles and responsibilities, and recognition of real world practices. Evaluation of participant responses from the group using PDAs yielded significantly better results than the group using traditional methods. In addition, during the test, information gained and the use of the PDA's decision making software enabled two patients with critical problems to be diagnosed whose conditions or drug interactions would have otherwise been missed [3].

2.2 Mobile Technology Usage and EHRs can also Reduce Medical Errors

The use of mobile technologies and EHRs can play an even more important role than improving the quality of rural healthcare. It has been reported that medical errors are the fifth leading cause of death in the U.S. [4]. The uses of mobile technology and EHRs have the potential to significantly reduce errors due to incorrect incomplete, misunderstood, or missing information. These technologies can provide more consistent data entry and effective interfaces to ensure the integrity of medical information. Sharing of patient information among practitioners would also be timelier.

3 Status of Mobile Technology and EHR use in Rural Northwest Florida

Table 1 indicates that physicians in rural areas of Florida are less likely to use EHRs, mobile technology to communicate with patients, and PDAs for medical applications than their urban counterparts. Rural and urban Florida physicians, however, used mobile computers at about the same rate. Rural NW Florida physicians showed about the same rate of use as other rural Florida physicians in all categories [1], [5].

Table 2, which compares rural NW Florida to the U.S., indicates similar results as those shown in Table 1, which compares rural NW Florida to other areas of the state. [1], [6], [7].

Table 1. Percentage of Florida Practices Using EHR and Mobile Technologies compared to Rural NW Florida.

Technology Usage	Florida Urban	Florida Rural	NWFL Rural
EHR	24%	17%	15%
Patient communication	17%	8%	6%
Mobile computer	81%	77%	78%
PDA	38%	32%	31%

Comparing the Tables, urban Florida physicians and urban U.S. physicians use EHRs and mobile technology for patient communication at about the same rate, but Florida urban physicians use mobile computers and PDAs less. Rural NW Florida physicians and rural U.S. physicians showed about the same rate of use in all categories.

Table 2. Percentage of U.S. Practices Using EHR and Mobile Technologies compared to Rural NW Florida.

Technology Usage	U.S. Urban	U.S. Rural	NWFL Rural
EHR	23%	17%	15%
Patient communication	19%	7%	6%
Mobile computer	85%	80%	78%
PDA	43%	30%	31%

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