Computerized Physician Order Entry System: Physicians' Comments and Satisfaction Survey in Taiwan

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Abstract and Objective

This survey includes interface design, operational functions, effectiveness of usage, interface usability and satisfaction with CPOE (computerized physician order entry).

Keywords:

Computerized physician order entry, Usability, Satisfaction, Interface design

Introduction

Due to the rapid development of information technology, many computer systems are installed in various health organizations for clinical medicine application. To establish a good interface design principle is greatly important. This study uses usability design principle and result analysis to observe user acceptance and satisfactory level by using CPOE (computerized physician order entry) interface. We hope the results of this analysis will bring a more usable and adequate CPOE system to the medical community.

Methods

This study was used to investigate the satisfactory use of CPOE interface at a single medical center located in the northern part of Taiwan. Data was gathered through questionnaires (this includes questionnaire, user suggestion feedback, and basic user personal information). The contents include 28 questions divided into 22 questions for usability and 6 questions relating to satisfaction). 225 valid questionnaires were returned (return rate of 84.5%). We assigned serial numbers to returned questionnaires and used SPSS/Windows English version 15.0 to do data analysis.

Results

From derived basic personal information we found the majority of users to be younger than 35 years old, male, and having more than 3 years experience in using CPOE. Most users were familiar with more than 5~6 different software applications and did not feel uncomfortable using computers. If we analyze user variable character data in Pearson's correlation, age and computer experience (r .93、p<.01), age and length of use of CPOE (r .43、p<.01) seniority and length of use of CPOE (r .45、p<.01) we find from this statitical data that there exists a relationship between CPOE length and extent of computer experience: the more one uses CPOE, the more likely one is familiar with computer applications.

From the analysis, we found that users with a higher acceptance for usability and overall satisfactory rate are those users who experience fewer pressures when using computers, are hospital residents, or are users with more experience with the CPOE system. These three categories of people feel that the usability is highly satisfactory and acceptable. In addition, those who are more comfortable using computers and possession of a high level of usability are used best as forecast factors of user satisfaction with CPOE.

From the feedback received, users suggested that organizations can provide complete hardware and software systems. Users want the system to be updated and maintained periodically. During the design process, designers should proactively inquire the opinion of the user. If IT personnel can design an easily and understandable interface using simple icons to update accordingly, then it can greatly improve the function of the system. Resultantly, this will greatly improve the user satisfactory level.

In addition to providing both hardware and software facilities of fine quality, the Order Entry System has to be user friendly with an intelligent multi-touch display function, keys or icons that are simple and easy to operate, and installed with handy tips or hints for its functions and operations.

Moreover, by integrating a systematic collection of electronic health information about individual patients, a billing function on a self-valuation basis, and an integrated delivery network of the hospital, clinic, or physician office, which smoothes the logistic processes, like delivering medications prescribed by doctors or drug re-ordering and replenishments, into the Order Entry System will greatly enhance the efficiency of the Electronic Health Record.

Conclusions

This report summarizes and provides user input and suggestion for interface design, connection function, addresses the common problems of usage, and proposes alternatives for the improvement of future CPOE development.