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An Evaluation of the Usability of Accessing MEDLINE over Short Messaging System

Alvin B. Marcelo[a], Paul Fontelo[b]

a *National Telehealth Center, University of the Philippines Manila* ***b*** *Office of High Performance Computing and Communications, National Library of Medicine, Bethesda, MD*

Abstract

The Philippines is the texting capital of the world with over one billion messages exchanged every day. With the increasing ubiquity of cellphones in this country, it becomes a popular tool for accessing many types of information. This study aims to determine the usefulness of short messaging system (SMS) for accessing the bottom line of articles in MEDLINE. Two groups of residents at one of the largest tertiary government hospitals in the country were trained on the SMS interface for txt2MEDLINE. After four weeks of interactions, their responses were analyzed and they were given survey on the usability of the interface as well as their ability to comprehend the abridged text-speak of txt2MEDLINE. Results showed that residents did not find additional usefulness with txt2MEDLINE over SMS but cited convenience of access from any point of care as one of its benefits.

Keywords:

Short messaging system, text, Philippines

Introduction

In the Philippines, over 22 million of the total 80 million Filipinos have mobile phones. In contrast,

only 5 million Filipinos have access to the Internet. Overall, there are only 1.53 million PCs in the country.[1]

Immediate access to current information is a must in today's rapidly evolving practice of health care. Both health care personnel and their patients have gained access to a wealth of information available on the World Wide Web. In this new arena, access to a knowledge-base must be at the point-of-care. However, available online access through a computer terminal is not always present, even in tertiary hospitals. The ubiquity of SMS on mobile phones provides an alternative way of accessing health care information. More importantly, health care practitioners have begun to appreciate the value of using mobile devices in practicing evidence-based medicine. [2]

The BBC reports that the Philippines is the SMS text messaging capital of the world. More than 200 million text messages are sent daily in the Philippines. The use of text messaging is major social phenomenon, widespread and pervasive. It is woven into the day-to-day activities of the people. Mobile phones are used in every aspect of life-media, religion, education, commerce and health care. English is an official language of the Philippines. More than a third of Filipino own mobile phones. Doctors and health care providers actively use SMS in daily clinical practice. Doctors regularly exchange information with patients via SMS. Residents use text messaging and multimedia messaging to refer patients to their attending physicians. Because of this, the local study participants--attending physicians, post-graduate trainees and other health care providers are already experts in the technology, no training is required. This will facilitate the implementation of the project. It is the ideal laboratory to evaluate this application.

Methods

An SMS gateway to MEDLINE was established in the Philippines, and two groups of residents (otorhinolarygology and family medicine) were trained to use the SMS interface of txt2MEDLINE [3]. In order to eliminate the effect of individual differences in comprehending text-speak (abridged words), they all underwent baseline assessment where they were asked to back-translate sample messages from the txt2MEDLINE system into conventional English. For the clinical aspect of the evalaution, they were also asked to fill out a survey that determined the usefulness of the service to their daily needs.

The Txt2MEDLINE architecture used by the National Library of Medicine in a previous study was modified to adapt the system to local needs and services. [3]. A TER-GX101 TriBand (900/1800/1900 MHz) GSM modem (Round Solutions Ltd) connected to a Linux computer (Ubuntu Server ver. 6.10) comprises the Txt2MEDLINE server. A Subscriber Identity Module from SMART Philippines mobile phone network, and SMStools interfaces between the GSM modem and MySQL database. The SMStools [4] (SMS Server Tools for GSM modems) was used instead of UltraSMS. This modification was done because of the flexibility of SMStools. Segmentation of long messages is handled by SMStools easily instead of passing the burden to the scripting language. PHP was

used as the scripting language that processes data coming in and out of the server.

Results

The clinical evaluation was done in two phases. Each phase lasted approximately two weeks.

Mean number of queries, evaluations and comments sent per day for the first phase was 40.5 messages per day. The queries done and the corresponding evaluations were grouped according to five main categories: Diagnostics,

Etiology, Prognosis, Treatment, and Prevention. The categories were adapted from a previous study by Florance [5] where the author did a structural analysis of clinical questions by physicians. This categorization is important to determine how the participants are using the Txt2MEDLINE system and to better explain the results of the study.

Conclusion

The txt2medline system succeeded in bringing immediate access to MEDLINE resources in a convenient and portable package. However several innovations in technology had intervened that made the SMS interface as costly or less cost-effective as online cellular communications protocols such as general packet radio services (GPRS) or 3G. An SMS-based information access facility given this environment may not be the most appropriate solution.

Information requirements in terms of usefulness and reliability of information were not satisfied. Given the larger volume of data that can be sent through GPRS or 3G, it appears an SMS based interface to MEDLINE such as txt2MEDLINE will be difficult to promote. This is especially true when participants had to make several

attempts in sending and reformulating queries before receiving the appropriate citation. Furthermore, the information available to the SMS system is very limited even with the longer messages used. A mobile phone browser-compatible website of PUBMED may be able to give more information at a lower overall cost.

There are more things to consider in developing a mobile information retrieval solution. We have to take into account the culture of research and information source biases found among our health professionals.

Studies suggest that doctors tend to rely on other sources of information for their practice other than Medline [6]. We may try to develop more appropriate information systems for physicians, but if the culture for using these are not present, we will inevitably fail.

Txt2MEDLINE is a novel idea for bringing EBM information closer to health care professionals. However, given the complexity of information needs of these health care professionals and the governing costs of communications in a specific area, it may not appear to be the best solution in the current configuration of this study.

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