Design and Evaluation of txt2MEDLINE and a Searchable Database of SMS Optimized, Clinical Guidelines for Clinicians in Botswana

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Abstract and Objective

Currently clinicians in rural sub-Saharan Africa have limited access to the Internet, which may impede the practice of evidence-based medicine. However, wireless mobile phone access and use is extensive. The University of Pennsylvania in collaboration with the National Library of Medicine (NLM) launched txt2MEDLINE and a Short Messaging Service (SMS) optimized, searchable clinical guidelines in Botswana. This pilot project will enable clinicians to query and receive PubMed abstract summaries and country-specific clinical guidelines using mobile phones. The objective of this project is to evaluate the utility of these tools for clinicians in Botswana. It will be an added resource to a pre-existing telemedicine network. Establishing the usefulness of these resources may provide an effective working model for other countries where limited Internet access impedes upon patient care.

Keywords:

Telemedicine, Mobile phone, Continuing medical education, Text messaging, SMS

Introduction

Clinicians within the rural areas of Sub-Sahara Africa continue to have limited access to the Internet in the clinic. Mobile telemedicine allows medical knowledge to reach rural areas of the developing world, where mobile phone coverage extends beyond computer networks.

Currently the University of Pennsylvania, in partnerships with other organizations including the Medical University of Graz, has created a telemedicine network (africa.telederm.org) that is rapidly expanding access to teledermatology and telemedicine in Africa. This network enables clinicians with Internet access to submit cases online. More recently, the network has expanded to include a mobile telemedicine platform, in conjunction with ClickDiagnostics, in order to enable clinicians in remote Botswana and other African countries to submit telemedicine consultations exclusively through mobile phones. Now, for the first time, txt2MEDLINE within Botswana will enable these clinicians to query PubMed abstracts using cellular phones. In addition, a searchable database of SMS optimized, clinical practice guidelines will provide clinicians the ability to search specific information for Botswana, including guidelines for general medical care, HIV/TB treatment, and the treatment of skin diseases.

Methods

A SMS gateway was created in the University of Botswana. This allows clinicians to send queries and receive results via in-country SMS on any type of cellular phone. The abstract results are returned to the mobile phone as a "the bottom line" (TBL) summary. Additionally, the 2007 Botswana Treatment Guide developed by Ministry of Health National Standing Committee on Drugs was converted into a format that can be queried by SMS.

Faculty at the University of Botswana Medical School recruited health professionals from the university to participate in evaluating the project. The participants were trained to use this technology on mobile phones either through standard text messaging or a JAVA enabled user-friendly interface. Each participant completed a survey assessing the need and desire for these services on cellular phones. In the next phase, participants will be given four weeks to test these new services. For objective evaluation, the searches will be monitored. At the end of the four weeks a follow-up survey will be done to elicit comments regarding their use of the technology and suggestions for improvement.

Results

Early feedback shows that participants have strong interests in using this new tool. Most participants had used PubMed in the past; however, 50% do not have convenient access to the Internet in the clinic. More than 80% of participants said they would use txt2MEDLINE and the Botswana Treatment Guide daily or weekly. The original SMS system returns journal abstracts in abbreviated text, but early user feedback shows that

it may be challenging for some healthcare providers who do not speak English as a first language.