TB-SMS: A Short Messaging Service (SMS) Medication Reminder Application for DOTS

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Abstract

While the current standard tuberculosis (TB) treatment remains to be the Directly Observed Therapy, Short Course (DOTS), other methods to improve adherence to medication schedules must be sought. The popularity of mobile phones provide another avenue for both doctors and patients to improve communication. The study aims to improve compliance in the DOTS program by sending daily Short Messaging Service (SMS) or text message medication reminders to TB patients. We developed a scalable, Web-based SMS tracking application that can be used to obtain and update patient data, send out medication and appointment reminders, convey health information, and recall patients for missed appointments.

Background

The ubiquitous presence of the mobile phone today and its possibilities for applications in the area of medicine is continuously growing. Doctors and patients have used mobile phones to establish contact and improve communication using SMS and mobile email. With its relatively low cost and ease of use, text messaging has gained overwhelming popularity worldwide. This can be harnessed to improve compliance in the DOTS program.

Methods

Using MySQL and PHP, we have created a scalable, user-friendly, Web-based SMS application that can monitor medication intake of patients undergoing anti-tuberculosis treatment (Figure 1).

Fig. 1. TB-SMS Architecture

Patient data is stored in a secured clinic server. The interface displays the patient roster and a customizable list of messages in English and Spanish. The SMS modem at the National Library of Medicine (NLM) sends out the text message to the patient's cell phone (Figure 2). Logs for incoming and outgoing messages are used to monitor patient's receipt and acknowledgement of messages. Only the text messages are handled by the NLM servers. No patient information is exchanged.
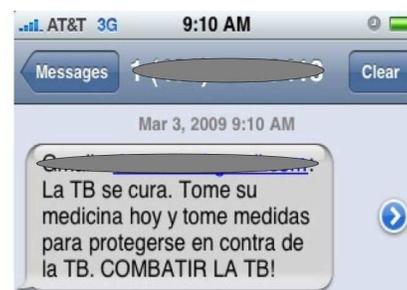

Fig. 2. Sample of an outgoing text message in Spanish

Discussion

TB is a global pandemic and several methods to improve patient adherence in TB treatment have been proposed.[1] Presently, the DOTS intervention, where the patients are observed taking their medications, is the current standard of care worldwide. One of its drawbacks though is that it requires significant human and economic resources, which are oftentimes lacking especially in developing countries. With daily SMS medication reminders, patients receive health messages and are encouraged to take their medicine. This may translate to better compliance and treatment rates.

Conclusion

We have developed a scalable, web-based SMS tracking application that can be used to obtain and update patient data, send out medication and appointment reminders, convey health information, and recall patients for missed appointments.

References:
1. World Health Organization. Stop TB Partnership: 2007 Tuberculosis Facts. http://www.who.int/tb/publications/2007/factsheet_2007.pdf.