Letter to the Editor

The potential of mobile phone technology for public health practice in Ethiopia

Kebede Deribe, Ayalu A. Roda

The invention of mobile phones has significantly chanted communication (1). There is a growing global trend in harnessing this technology for behavior change, disease surveillance, prevention and control (2-4).

In Ethiopia, access to mobile phones is expanding widely (5). The expansion of the services to rural and inaccessible areas has made them a preferred way of communication. Ethio-Telecom, the sole telecommunication services provider in the nation, has the ambition of 85% national geographic coverage of mobile signals which is expected to expand mobile phone services across the country. According to the agency, in July 2011 the number of mobile phone subscribers in Ethiopia exceeded 10 million; this implies that one in eight Ethiopian has access to mobile phones (5,6). With the trend of decreasing prices of mobile handsets, improved services and coverage, the uptake of use of cell phones will increase (5).

Many large scale studies have documented the potential application of mobile phones for different health interventions. In a recent study in Kenya (7) text massage reminders were found to be effective in improving had significantly improved ART adherence and viral suppression compared with individuals in the control group (8). A study form Uganda documented short text massage reminders for People Living with HIV (PLHIV) increased clinic attendance after missed attendance after missed appointments (9). In a review of 14 studies targeting preventive health behaviors such as smoking cessation and clinical care such as diabetes self-management using a mobile phone, positive behavior changes were observed in 13 of the 14 studies. The authors concluded that SMS=delivered interventions can have positive short-term behavioral outcomes (3). Many other studies have documented the importance of text messages to increase access to health information and behavioral change (4, 10).

Studies have documented the application of mobile text massages as a tool for public Health surveillance (11). For example in Darfur, mobile phones were found to be effective means of communication for public health surveillance and the provision of health information on pre-specified illnesses where access to the paper and pen-based reporting system was blocked due to the prevalent political instability (12). In China during the Sichuan province earthquake, mobile phones were used as an infectious disease surveillance tool which revived the surveillance system within a week (13). In Kenya, mobile phones were used for surveillance of avian flu (14). Mobile phones were used in Uganda to collect health information and send it to a centralized server. This approach was found to be more cost-effective than the traditional paper based reporting (15). Ethiopia can take the lessons learned from other countries and the mounting evidence from literature.

This technology could be used by a variety of health practitioners. For example, health extension workers in particular could improve their effectiveness through the provision of information on key treatment practices such as the management of malaria or fever in children under five. Such interventions could enhance the capacity of health extension workers and might have immense implications for improving the quality of health services in the country.

Secondly, surveillance systems could be established through the network of health extension workers. They could be provided with a specified number for diseases which need immediate reporting (e.g. cholera). In addition, a pre-designed template can be used by them to report weekly reportable diseases.

Thirdly, the technology could be used to provide health information to the general public. It could also be used for alerting the people during emergency situations and outbreaks of disease; and reminders for medication adherence and defaulter tracing.

Finally, mobile phones could be used as a tool for strengthening the health management information system. This facilitates collection and compilation of information from wide areas. In conclusion, we believe that it is now time to harness mobile phone technology for public health practices in Ethiopia. However, context specific research should precede any planned interventions using mobile phones. Characterizing the subscribers and taking the lessons learned from the commercial sector on the use of the service and the adaptability of the system to the context of public health are important firs steps.

[1]Addis Ababa Ethiopia, P.O. Box 2082 code 1250 E-mail kebededeka@yahoo.com, Tel. 251911937708;
[2]Department of public Health, College of Health Sciences, Haramaya University, Harar, Ethiopia, E-mail ayaluaklilu@yhaoo.com

References

1. Terry M. Text messaging in healthcare: The elephant knocking at the door. *Telemed J E Health* 2008;14:520-24.
2. Krishna S, Boren SA, Balas EA. Health care via cell phones: A systematic review. Telemed J E Health 2009;15:231-40.
3. Fjeldsoe BS, Marshal AL, Miller YD. Behavior change interventions delivered by mobile telephone short-massage service. *Am J Prev Med* 2009;36:165-37.
4. Cole-Lewis H, Kershaw T. Text massaging as a tool for behavior change in disease prevention and management. *Epidemiol Rev* 2010;32:56-69.
5. Adam L. Ethiopia ICT Sector Performance Review: 2009/2010. Towards Evidence Based ICT Policy and Regulation, Volume Two, Policy Paper 9, 2010.
6. Ethiop Telecom. Mobile subscribers' number reaches 10 millions. Press release July 2011. Available at: [http://www/ethiotelecom.et/press/news.php?id=33] Accessed on 17/10/2010.
7. Zurovac D, Sudoi RK, Akhwale WS, Ndiritu M, Hamer DH, Rowe AK and et al. The effect of mobile phone text-message reminders on Kenyan health workers' adherence to malaria treatment guidelines: a cluster randomized trial Lancet. 2011 Aug 27;378 (9793):795-803. Epub 2011 Aug 3.
8. Lester RT, Ritvo P, Mills EJ, Kariri A, Karanja S, Chung MH, et al. Effects of a mobile phone short message service on antiretroviral treatment adherence in Kenya (WelTel Kenya1): a randomized trial. *Lancet* 2010;376:1838-45.
9. Kunutsor S, Walley J, Katabira E, Muchuro S, Balidawa H, Namagala E and et al. Using mobile phones to improve clinic attendance amongst an antiretroviral treatment cohort in rural Uganda: a cross-sectional and prospective study. *AIDS Behav* 2010 Dec;14(6):1347-52.
10. Mahmud N, Rodriguez J, Nesbit J. A text message-based intervention to bridge the healthcare communication gap in the rural developing world. *Technology Health Care* 2010;18(2):137-44.
11. Yen MY, Wu TS, Chiu AW, Wong WW, Wong PE, Chan TC and et al. Taipei's use of a multi-channel mass risk communication program to rapidly reverse an epidemic of highly communicable disease. *PLoS One* 2009 Now 23:4(11):7962.
12. Deribe K. Mobile phones used for public health surveillance in Darfur. Forced Migration Review issue 38;2011. Available at [http://www.fmreview.org/technology/] Accessed on 17/10/2011.
13. Yang C, Yang J, Luo X, Gong P. Use of mobile phones in an emergency reporting system for infectious disease surveillance after the Sichuan earthquake in China. *Bulletin of the WHO* 2009 Aug; 87(8):619-23.
14. Shah A. the future is now: mobile technology/ and public health. The Yale Journal of Public health. Winter 2007. Available at [http://www/cdc/gov/ news/2007/03/mobiletech_mian.html] Accessed on 17/10/2011.
15. Sasaki D. Gebru B. Disease surveillance with mobile phones in Uganda. MobileActiive.org, 30 July 2008. Available from [http://mobileactive.org/ berhane-gebru-disease-surveillance-mobile-phones-uganda] Accessed on 17/10/2011.