



## Letter to the Editor

**Text messaging immunization reminders: Feasibility of implementation with low-income parents**

Text messaging reminder systems are a cost-effective way of improving attendance in a variety of healthcare settings (Downer et al., 2006; Geraghty et al., 2008; Koshy et al., 2008; Leong et al., 2006). Due to the complicated nature of the child immunization schedule (Massoudi, 2003), and the penetration of mobile phones among hard-to-reach populations (Blumberg and Luke, 2008), text messaging may be a successful strategy to increase immunizations (Vilella et al., 2004). The only identified study regarding text message immunization reminders suggests parents of adolescents are open to receiving such text reminders (Kharbanda et al., 2009). However, this study involved focus groups of only 28 parents.

A major public health goal is to increase immunization rates among children to 90% to prevent the circulation of vaccine-preventable diseases (Massoudi, 2003). In particular, programs that promote the 4-3-1-3-3 series among children 2 years of age and younger have been found to dramatically reduce the incidence of these diseases (Nelson et al., 2007). The purpose of this formative study was to determine the feasibility of developing text immunization reminders for parents of young children.

A brief survey was administered to 200 consecutive parents of children under six years of age at a Midwestern Pediatric Residency clinic. The survey was approved by two local Institutional Review Boards. All questions were fixed response, and included current use of a cell phone, type of text messaging service, and interest in receiving text messages from health care providers. Finally, respondents provided demographic information.

Surveys were completed by 190 parents (95%). The majority were female (165; 87%), had a high school diploma or less (114; 60%), had a household income less than \$20,000 a year (117; 62%), and received public insurance (153; 81%). Nearly all participants owned a cellular phone (174; 92%) and of those, 96% (167) could receive text messages. In addition, 81% (141) had an unlimited text messaging plan. Ninety percent (156) of cell phone owners would be open to receiving text messages from their doctor or nurse. Parents with unlimited text capabilities were more likely (97%) to be open to receiving text messages from health care providers than those with limited text plans (64%) ( $\chi^2(1) = 32.98, p < .001$ ).

Of those respondents who own a cell phone and were interested in receiving text messages from their health care provider (156), 99% (155) would be open to receiving appointment reminders, 87% (135) immunization reminders, 76% (119) test results, and 46% (72) general health tips. Most respondents (136; 87%) would prefer to receive immunization reminders one week or less before the shots are due. Of those parents who would enroll in a text immunization reminder service, 19% (29) would pay up to \$9.99 a year for the program, but the majority (97; 62%) would only enroll if the program was free or covered by insurance.

In conclusion, parents receiving public insurance are likely to have a cellular phone with text message capabilities, and most would be willing to receive immunization or other reminders from their physician's office via text. Parents with unlimited texting were more willing to receive text messages from physicians, but 4 out of 5 parents had unlimited texting, so this does not appear to be a major barrier. In addition, most parents were unwilling to pay out-of-pocket to enroll in such a service; therefore it is more likely to succeed if it is provided free of cost or covered by insurance. Limitations of this study include the following: all fixed-response questions, available only in English, administered in one geographic region, and results may not be generalizable to other populations. Further study to address these limitations is needed.

**Conflict of interest statement**

The authors declare that there are no conflicts of interest.

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**References**

- Blumberg, S., Luke, J., 2008. Wireless substitution: early release of estimates from the National Health Interview Survey, July–December 2007. National Center for Health Statistics, Centers for Disease Control and Prevention.
- Downer, S.R., Meara, J.G., Da Costa, A.C., Sethuraman, K., 2006. SMS text messaging improves outpatient attendance. *Aust. Health Rev.* 30, 389–396.
- Geraghty, M., Glynn, F., Amin, M., Kinsella, J., 2008. Patient mobile telephone 'text' reminder: a novel way to reduce non-attendance at the ENT out-patient clinic. *J. Laryngol. Otol.* 122, 296–298.
- Kharbanda, E.O., Stockwell, M.S., Fox, H.W., Rickert, V.I., 2009. Text4Health: a qualitative evaluation of parental readiness for text message immunization reminders. *Am. J. Public Health* 99, 2176–2178.
- Koshy, E., Car, J., Majeed, A., 2008. Effectiveness of mobile-phone short message service (SMS) reminders for ophthalmology outpatient appointments: observational study. *BMC Ophthalmol.* 8, 9.
- Leong, K.C., Chen, W.S., Leong, K.W., et al., 2006. The use of text messaging to improve attendance in primary care: a randomized controlled trial. *Fam. Pract.* 23, 699–705.
- Massoudi, M., 2003. Achieving healthy people 2010 immunization goals: proceedings of a national conference. Chapel Hill, North Carolina: October 12–13, 2001. *Clin Ther* 25 (Suppl A), A18–A32.
- Nelson, Z., Schiller, J., G.S., 2007. Rates of 4:3:1 vaccination among U.S. children aged 19–35 months. National Health Interview Surveys, 2002–2003: National Center for Health Statistics, Centers for Disease Control and Prevention.
- Vilella, A., Bayas, J.M., Diaz, M.T., et al., 2004. The role of mobile phones in improving vaccination rates in travelers. *Prev. Med.* 38, 503–509.

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