What 2 know b4 u text: Short Message Service options for local health departments

Hilary Karasz, PhD, & Sharon Bogan, MPH

Text messaging (SMS) is a mobile technology now used by hundreds of thousands of Washingtonians. The technology is also being used around the country and world to deliver timely, customized, and relevant health information to end-users right to their cell phones. Text messaging holds tremendous potential to protect and promote the health of many Washingtonians and do it efficiently and at a low cost. But there is much for local health departments to learn before they can employ this technology to best effect. Research by communications practitioners at Public Health – Seattle & King County is examining how text messaging may be used by local health departments to engage audiences, as well as legal, fiscal, and logistical issues that should be considered before program implementation.

Introduction

What do the heart, the wristwatch, and a magic wand have to do with health? According to B.J. Fogg (2009) of Stanford University's Captology lab, they are metaphors for the power of mobile technologies, such as text messaging, to persuade people to engage in healthy behaviors. Cell phones touch our hearts because so many of us love our cell phones and can't be without them. Cell phones are like wristwatches – our phones are always with us, always on. And the magic wand? Cell phones today can do so much more than make a simple phone call – like magic, they can help with diabetes management and motivate us to exercise, to remind patients about doctor visits or alert about health emergencies (Fogg, 2009).

This article offers basic information about how text messaging could be used by the public health practice community. Authors provide key insights from research about text messaging and present some of the barriers to implementation of text messaging strategies by health departments in Washington State.

The basics: what is SMS and who uses it?

Short Message Service (SMS), commonly known as text messaging, allows users to send short, 160 character long messages to end-users' cell phones. Smith (2010) reported that despite the short length of a text message--or perhaps because of it, its popularity has exploded in the United States. In early 2010, 72% of all cell phone owners had sent or received a text message compared with 65% the previous year.

Smith (2010) continued to report that the popularity of text messaging by Latino and African American cell phone owners was even higher. While text messaging used to be an activity strictly for the young, The Pew Internet & American Life Project (Smith, 2010) found that 82% of 30-49 year olds text, and 57% of cell phone owners aged 50-64 years text. While a typical text messaging campaign may once have been targeted solely to young people, currently it is a technology that is ubiquitous among people of almost all ages and backgrounds.

Why is text messaging so appealing to so many people?

Before sending out a single text message from our health department, we wanted to know how our audiences perceived SMS and what types of information they would like to receive from a local health department. Our research has shown that text messaging is gratifying to people for different reasons. For example, in our study of 130 young adult texters in King County, we found at least four different "types" of texters: "on-the-go" texters who use texting as a tool to organize their busy lives; "strategic" texters, who text in a targeted way in a quest for efficient communication and to avoid getting into lengthy conversations; "intimate" texters who use texting to maintain relationships with family and friends; and "security" texters, who like text messaging because of the peace of mind they gain knowing that they have a reliable form of communication in times of need. Each type of texter has embraced text messaging as a convenient method to bridge communication gaps.

What types of text messaging health campaigns are possible?

The uses of text messaging in the health field run the gamut from appointment reminders (Leong, et al., 2006), to pharmaceutical authentification (Cheng, 2010), and even medical test results (Mengo, 2010). Campaigns evaluated to date have included smoking cessation (Haug, Meyer, Schorr, Bauer, & Ulrich, 2009), diabetes management (Waller, Pagliari, & Greene, 2006), sexual health (Levine, McCright, Dobkin, Woodruff, & Klausner, 2008), increasing sunscreen use (Armstrong, Watson, Makredes, Frangos, Kimball, & Kvedar, 2009), improving vaccination rates (Bayas et al, 2004), emergency communication, (Gomez, 2008), and many others (Fjeldsoe, Marshall, & Miller, 2009). In addition, there are hundreds of other health-oriented campaigns offered that have not been formally evaluated: the technology is in its relative infancy and much still needs to be known about what's most effective.

Despite the overall popularity of text messaging, few programs seem to be offered by local health departments, however. Talking with program staff from various health departments, we have found this is because of a lack of understanding about how text messaging might be used, how to select vendors to help with the text messaging process, and questions about cost and effectiveness.

Though it may be daunting to launch a text messaging campaign, it may be worth the effort.

Our research shows that in King County, many people would value receiving text messages from public health, particularly regarding emergencies. In a random-digit dial telephone survey we conducted among 402 King County adults who text, 82% said they would want to receive messages from us in a health emergency. About half of the people we surveyed said they would like to receive messages learning how to prepare for an emergency, and a full quarter of those surveyed would like to receive health department messages about other health topics.

At Public Health – Seattle & King County, several pilots in the arena of emergency communications are currently underway. One pilot uses text messaging to remind parents of some children to obtain a second dose of influenza vaccine for their child. We found that as many as 85% of eligible parents wanted us to send them a text message to remind them to get their child the second dose. While evaluation is not yet complete, it appears that the high rate of opt-in to this program was because the information was perceived as highly customized to the needs of the parent.

A second pilot will launch at Public Health soon that uses text messaging to contact our employees during an emergency, such as an unexpected worksite closure from electrical outages, etc. Staff would be asked to sign up with their personal cell phones for this opt-in only service. Before launching the pilot, we asked staff what kinds of messages they'd like to receive from Public Health, and what their concerns were. Over 800 of our 1600 public

health staff responded to our survey. We found some concern that messages would not rise to the level of a "true" emergency, and that text messages from work on non-emergency issues would be intrusive on private time. Staff were also concerned that if they signed up to receive messages, they'd be "responsible" for acting on a message that they received. Even so, despite concerns, approximately two-thirds of respondents said they'd sign up to receive emergency text messages from Public Health; the timeliness of the emergency texts seem to be what is most appealing.

Considerations for Implementation

Findings from the literature and from our own research indicate that not all text messaging campaigns will be successful. The best campaigns are ones where the messages are:

- Timely
- Customized and pertinent to the needs of the audience
- Clear, with minimal abbreviations
- Judicious frequency

In addition, there are several key issues to keep in mind:

Opting in: Our experience has driven home the importance of marketing text message programs. Since individuals must opt-in to receive text messages, it is critical to carefully plan a marketing strategy. It doesn't matter how powerful your messages are if you can't get people to opt-in to your program. For example,

we wanted a particular at-risk population to join a public health emergency preparedness text message campaign, and we used postcards to inform them how to sign up. We pre-tested the postcards with the target audience. We distributed the postcards at bars and dance events where we knew outreach workers would come into contact with this particular audience. We had a lower opt-in rate that we had hoped for in part because the place where we attempted to engage the audience simply wasn't conducive to raising interest in public health preparedness.

Privacy: There are important limitations related to the content of the messages that may sent by covered health entities due to the Health Insurance Portability and Accountability Act of 1996 (HIPAA) Security Rule. While programs may find value in sending personalized, protected health information such as test results via SMS, currently this presents a security risk, primarily because text is not easily encrypted (unlike email).

Language: There are limitations in sending text messages to non-English speakers. It can be challenging to ensure that translated messages also fit within the 160 character limit. Furthermore, texting in non-Roman alphabet characters presents additional technological challenges. Currently, both the sender and the recipient of text messages sent in non-Roman alphabet languages need to have special software. We will be exploring this further in future projects.

Management: Finally, once the program is marketed, messages developed and the system set up, it is critical to plan the management of the sending and receiving of text messages. Dedicated staff is required to make sure that the messages are sent correctly and to follow-up on any potential texting system issues that may arise.

How text messaging works

Text messages originate either with a sender's phone, or a computer application that allows the sender to send messages across data networks to hundreds or thousands of people at the same time. Text messages are routed from cell phone towers to aggregators, which sort the messages to make sure they go to the correct cellular carrier for delivery to the recipient's phone.

Third party vendors provide an essential service for health departments interested in using text messaging. Vendors provide a web-based interface to conveniently store and manage cell phone numbers, and messages may be sent to end-users at the click of a button. Vendors have previously established relationships with aggregators, so that messages may be sent seamlessly over carrier networks to end-users with minimal delay.

Before an organization can begin to send text messages, each recipient must opt-in to receive the messages. The end user typically opts in to receive text messages by texting a key word to a short code. A vendor will supply the sending agency with the short code, which is typically

five or six numbers long. Using the short code, text messages may be sent either one-way (from agency to end-user) or two-way (from agency to end-user and then from end-user back to the agency). The two-way option provides an opportunity for the agency to collect information from the end-user. For example, in our flu vaccine pilot mentioned above, we sent text message reminders to parents to remind them to obtain a second dose of flu vaccine for their children who needed a booster. We asked parents whether they followed up on our reminder by texting "yes" or "no" to our vendor-supplied short code. For parents who responded "no," we'll be asking them to explain why by sending us a follow-up text message. We'll ask them to text back "1" if they're "too busy," text "2" if the vaccine is too expensive, text "3" if they don't know where to go for a vaccine, and so on.

Costs:

In the United States, both the sender and the recipient of text messages pay a fee. The cost of receiving a text message ranges from a few cents up to $.25 per text or more. However, most carriers offer bundled or unlimited texting plans, and most people who text regularly have signed up for one of these plans. Our research has shown that very few people cite cost as a barrier to opting in to a health department text messaging program.

The cost for the organization of sending text messages through a vendor is typically based either on monthly fees or pay-per-text. Deciding on whether to select a vendor that offers pay-per-

text or a monthly fee will likely depend on how many messages are planned. Service providers typically establish tiers of fees according to the number of messages sent (and received back) on a monthly or annual basis. Some providers utilize a credit-based system whereby a client can purchase a block of credits that will in turn pay for a certain amount of text messages sent and received.

Monthly Fee: Vendors will often offer a monthly service package of outgoing messages based on level of usage, such as 0-5,000, 5,000-10,000, etc. This monthly rate may also include licensing fees, maintenance and support. Optional services may be added for additional monthly fees.

Pay-per-text: To send out messages to end-user clients, vendors often develop a pricing scheme based on the volume of messages delivered. For example, up to 10,000 outgoing messages may cost approximately $0.08/message, with greater volumes at a lower rate.

Summary

Knowing what people like about text messaging and what kinds of information they want from their local health department is essential to design the best possible program. A good marketing plan is also key, because text messages cannot be sent to people without their prior consent – they must opt in. Learning how the audience uses SMS and what they like about it should improve marketing and increase the likelihood that the audience will sign up.

Text messaging is only one of many new technologies in the communications toolbox now at the disposal of local health departments across our state. While there are many limitations with the technology, one thing is clear: Text messaging can reach people quickly, with information they want, when they want it. In a world in which people expect information conveniently and on their own terms, text messaging provides the possibility of serving our residents with important health information efficiently, and at a reasonable cost.

References

Armstrong A. W., Watson A. J., Makredes, M., Frangos, J. E., Kimball A. B., & Kvedar J. C. (2009). Text-message reminders to improve sunscreen use: a randomized, controlled trial using electronic monitoring. *Arch Dermatology, 145* (11), 1230-6. doi:10.1001/archdermatol.2009.269

Cheng, M. (2010, August 20). *Africans text message to check if drugs are real*. Associated Press. Retrieved September 6, 2010 from Associated Press website: http://www.associatedpress.com/

Fogg, B. J. (2009). The future of persuasion is mobile. In Fogg, B. J. & Eckles, D. (Eds.) *Mobile Persuasion: 20 perspectives on the future of behavior change*. Stanford, CA: Stanford Captology Media.

Franklin, V. L., Waller A., Pagliari C., & Greene S.A. (2006). A randomized controlled trial of Sweet Talk, a text-messaging system to support young people with diabetes. *Diabetic Medicine*, *23* (12), 1332-1338. doi:10.1111/j.1464-5491.2006.01989.x

Fjeldsoe, B.S., Marshall, A.L., & Miller, Y.D. (2009). Behavior change interventions delivered by mobile telephone short-message service. *American Journal of Preventative Medicine, 36* (2), 165-173. doi:10.1016/j.amepre.2008.09.040

Gomez, E. A. (2008). Connecting Communities of Need with Public Health: Can SMS Text-Messaging Improve Outreach Communication? *Proceedings of the 41st Annual Hawaii International Conference on System Sciences*. http://doi.ieeecomputersociety.org/10.1109/HICSS.2008.99

Haug, S., Meyer, C., Schorr, G., Bauer, S., & Ulrich, J. (2009). Continuous individual support of smoking cessation using text messaging: a pilot experimental study. *Nicotine and Tobacco Research, 11*(8), 915-23. doi:10.1093/ntr/ntp084

Smith, A.(2010). *Mobile Access. Pew Internet & American Life Project*. Retrieved September 15, 2010 from the Pew Research Center website: http://www.pewinternet.org/Reports/2010/Mobile-Access-2010.aspx

Leong K. C., Chen, W. S., Leong, K. W., Mastura, I., Mimi, O., Sheikh, M. A., Zailinawati, A. H., Ng, C. J., Phua, K. L., & Teng C. L. (2006). The use of text messaging to improve attendance in primary care: a randomised controlled trial. *Family Practice, 23*, 699–705. doi:10.1093/fampra/cml044

Levine, D., McCright, J., Dobkin, L., Woodruff, A. J., & Klausner, J. D. (2008). SEXINFO: A sexual
        health text messaging service for San Francisco youth. *American Journal of Public Health,* 98 (3),
        393-395. doi:10.2105/AJPH.2007.110767

Mengo,V. (2010). Government's SMS System for HIV Test Results. *Inter Press Service News Agency,*
        Retrieved December 15, 2010 from the Inter Press Service website:
        http://ipsnews.net/news.asp?idnews=50781

Vilella, A, Bayas, J. M., Diaz, M. T., Guinovart, C., Diez, C., Simo, D., Munoz, A., & Cerezo, J. (2004).
        The role of mobile phones in improving vaccination rates in travelers. *Preventive Medicine, 38*,
        503–509

Author information

Hilary Karasz, PhD (corresponding author)
Public Information Officer
Public Health – Seattle & King County
401 5th Avenue, Suite 1300
Seattle, WA 98104
T: 206-296-4767
F: 206-296-0166
hilary.karasz@kingcounty.gov

Sharon Bogan, MPH
Program Manager
Public Health – Seattle & King County
401 5th Avenue, Suite 1300
Seattle, WA 98104
T: 206-263-8770
F: 206-296-0166
sharon.bogan@kingcounty.gov