



## Text Messaging to Encourage Prenatal Care

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**Text messaging presents an opportunity to provide low-cost, multilingual communication that is easily delivered between visits. This small-scale pilot study demonstrates the usefulness of text messaging to improve provider reach and engagement in prenatal care for at-risk women.**

**T**he obstetric team at Lynn Community Health Center (LCHC) is working hard to promote healthy outcomes by ensuring that women receive the appropriate level of prenatal care. The team strives to deliver culturally sensitive and patient-centered care. Even so, there are barriers to such care, including a wide range of socioeconomic, demographic, physical, or psychological disabilities, which may cause a woman to delay or not enter into care at all.<sup>1</sup> Extensive literature suggests that little or no prenatal care contributes

to poor maternal and child health outcomes, including neonatal and infant mortality, prematurity, and low birth weight.<sup>2</sup>

Cell phones have become ubiquitous, and sending text messages involves minimal costs. This inexpensive and portable form of communication has the potential to provide health information at the fingertips of a diverse and large audience. Approximately 83% of adults have a mobile phone and 72% use text messaging, with the average user sending and receiving 10 texts per day.<sup>3</sup> Prior research suggests that using text messaging may be an efficient and effective tool to reach English- and Spanish-speaking pregnant women in offering support, providing announcements, education, and appointment reminders during their prenatal and postpartum care.<sup>4-8</sup> While there has been an emergence of interest using social networking for health care, technology as well as legal constraints have limited the use.

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LCHC is a comprehensive community health center based in Lynn, Massachusetts, home to many new immigrants with a large minority population. Text messaging presented an opportunity to provide low-cost, multilingual communication easily delivered between visits. The goal was to provide support and educational resources via text messaging, so that patients would become more engaged with their plan of care.

### Lynn Health Center Text Pilot Study

A text messaging pilot study was developed as a collaboration between the health center, Center for Connected Health, and Partners Community Health of Partners HealthCare.

The Center for Connected Health (CCH) has engaged in connected health program management and research for over 15 years and is affiliated with Partners HealthCare organizations, including Massachusetts General and Brigham and Women’s Hospitals. CCH aims to leverage technology to deliver care that is better integrated into the day-to-day lives of patients.

Partners Community Health is an area of Partners HealthCare and drives the system’s commitment to improve the health and well being of low-income and vulnerable people and populations. Partners Community Health funds and operates programs to increase access to health care, enhance economic opportunities, and achieve community health improvements.

The goal of the pilot study was to help ensure at-risk pregnant patients receive adequate prenatal care. The program was aimed at young at-risk pregnant patients, who are of an age group in which text messaging is increasingly common as a mode of communication. The 25 pilot patients were enrolled by their LCHC obstetrics case manager.

The LCHC team, including the obstetrics clinical staff and administrators, created the text campaign content. The messages were designed to be outbound

only, with the goal of helping patients stay connected to their clinical team through educational tips, reminders, and motivational support. Examples of messages included:

*“Your OB team wants to remind u that u can call us anytime @ (xxx) xxx-xxxx. Stay on the line and don’t forget to tell us you’re pregnant.”*

*“Hi, it’s your OB team. We want to make sure u have a plan to get to the Birthplace. Let us know if we can help.”*

The frequency of messages was limited to no more than three in a given week. The messages were personalized to each patient based on date of enrollment, language preference (English or Spanish), and last menstrual period. Some messages repeated over time, and some were delivered one-time only. Messages were

**TABLE. Pilot Recruitment**

33 Recruited	8 patients refused: 2 did not want more contact 2 did not have unlimited text 1 did not have a cell phone 3 language barriers
25 Enrolled	Text program language selected: 17 Spanish 8 English
5 Withdrawn	Due to pregnancy complications or transfer of care to another site
20 Completed the study	

related to the development of the baby and preparation for childbirth, and encouraged newborn and postpartum care.

### Results

A total of 25 patients were enrolled, with ages ranging from 14 to 32 years of age (Table). The average age was 22 years old. Overall, 96% of the patients were enrolled during their first or second trimester.

Patients were surveyed after 6 months and at the end of the pilot period at

month 12 to measure satisfaction and perceptions of the program. A total of 19 surveys were completed.

### *Main findings*

- 95% of participants found the program helpful
- 100% read most or all of the messages
- 75% thought the number of messages was “just right”
- 84% said the program helped them learn to take care of themselves and their baby
- 100% would recommend the program to other pregnant patients

### *Open-ended answers*

- “It helped me remember to take my vitamins.”
- “It helped me a lot.”
- “It made me feel supported by the team.”
- “(The messages) were always paying attention to my health and my baby’s health.”

### FOCUSPOINT

*Considering 100% of patients reported reading all or most of their messages, a text messaging program may augment other clinical services by reinforcing educational points or important care plan details.*

Although this was a pilot study with a small sample size, the results suggest that these patients had a higher level of attendance to their prenatal visits compared to the level the Center typically sees with this patient population.

Based on the initial success of this study, Partners HealthCare is expand-

ing the text-messaging program to other health care centers in its network and will continue to be evaluated as an ongoing operational program.

### **Discussion**

The survey data suggests that patients’ perceptions of and satisfaction with the text messages were very positive and may have contributed to the increased engagement observed in prenatal care visits. Considering 100% of patients reported reading all or most of their messages, a text messaging program may augment other clinical services by reinforcing educational points or important care plan details.

The possible improvement in attendance to prenatal visits suggests text messaging can be an important tool to remind patients about the importance of regular care and contribute to overall improvement in health outcomes for pregnant adolescents and young adults and their newborns.

### **Lessons Learned and Program Improvements**

The pilot program afforded several important learning and program improvement opportunities, which are now being integrated into the new expanded program.

### **Participation at the Health Center**

Participation of the LCHC team was essential for pilot design and content development, ensuring the content was targeted to their patients. The clinic’s deep knowledge of their patients and the voice of the health center led to more engaging and relevant content.

### **Program Operations**

It was deemed important that patient status changes were reflected immediately in the program. Rather than requiring the obstetrics team to inform CCH of changes to a patient’s status in order to update the messaging campaign, the new program allows the obstetrics team to change patient status and enroll or disenroll pa-

tients directly via the clinic's website. This website will integrate the program into the clinic workflow more easily.

### Message Content and Frequency

- Text messages needed to be personalized to the patient (ie, trimester specific educational information) and to their health center (ie, the obstetrics team's phone number and location of the hospital).
- Providing messages in both English and Spanish, including the use of language-specific shortcuts for texting and culturally-sensitive language, was important for patient engagement.
- Frequency of messages was important to patient adoption. Typically each patient received 1 to 2 messages per week in the beginning, and 2 to 4 messages per week as the pregnancy progressed.

### Summary

The results from this small-scale pilot study provide early promise in demonstrating the usefulness of text messaging to improve provider reach and engagement in prenatal care for at-risk women. This program is now being offered as part of the patients' standard of care in our clinic. Early indicators show the text service is easy to integrate into the case manager's workflow; however, some additional notifications of patient status would help improve the time spent. For example, if the electronic medical record captured a loss or other complication to the pregnancy, the status for the text program should automatically be

updated so the standard texts are no longer sent. Further research and evaluation is planned for the prenatal text program and will help inform a better understanding of the impact of text messaging campaigns for improving prenatal care.

*The authors report no actual or potential conflicts of interest in relation to this article.*

### References

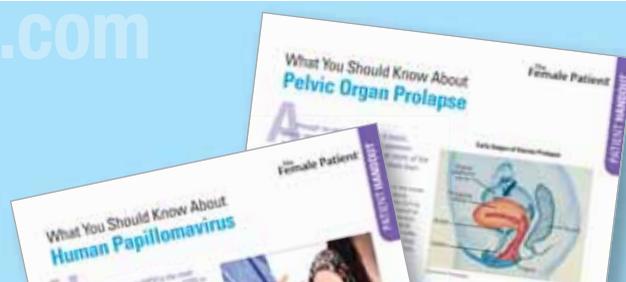
1. U.S. Department of Health and Human Services. Healthy people 2020; Maternal, Infant, and Child Health. Available at: <http://www.healthypeople.gov/2020/topicsobjectives2020/overview.aspx?topicid=26>. Accessed August 21, 2011.
2. Centers for Disease Control and Prevention. From data to action: CDC's public health surveillance for women, infants, and children. Published 1994. Reviewed June 2009. Available at: <http://www.cdc.gov/reproductivehealth/ProductsPubs/DataToAction/pdf/DataToAction.pdf>. Accessed August 21, 2011.
3. Lenhart A. Adults, Cell Phones and Texting. Pew Internet & American Life Project. 2010. Available at: <http://pewresearch.org/pubs/1716/adults-cell-phones-text-messages>. Accessed August 21, 2011.
4. Armstrong AW, Watson AJ, Makredes M, Frangos JE, Kimball AB, Kvedar JC. Text-message reminders to improve sun-screen use: a randomized, controlled trial using electronic monitoring. *Arch Dermatol*. 2009;145(11):1230-1236.
5. Chen ZW, Fang LZ, Chen LY, Dai HL. Comparison of an SMS text messaging and phone reminder to improve attendance at a health promotion center: a randomized controlled trial. *J Zhejiang Univ Sci B*. 2008;9(1):34-38.
6. Cole-Lewis H, Kershaw T. Text messaging as a tool for behavior change in disease prevention and management. *Epidemiol Rev*. 2010;32(1):56-69.
7. Geraghty M, Glynn F, Amin M, Kinsella J. Patient mobile telephone 'text' reminder: a novel way to reduce non-attendance at the ENT out-patient clinic. *J Laryngol Otol*. 2008;122(3):296-298.
8. Leong KC, Chen WS, Leong KW, et al. The use of text messaging to improve attendance in primary care: a randomized controlled trial. *Fam Pract*. 2006;23(6):699-705.

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