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mHealth is an Innovative Approach to Address Health Literacy and Improve Patient-Physician Communication – An HIV Testing Exemplar

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Abstract

Low health literacy is a barrier for many patients in the U.S. Patients with low health literacy have poor communication with their physicians, and thus face worse health outcomes. Several government agencies have highlighted strategies for improving and overcoming low health literacy. Mobile phone technology could be leveraged to implement these strategies to improve communication between patients and their physicians. Text messaging, in particular, is a simple and interactive platform that may be ideal for patients with low health literacy. We provide an exemplar for improving patient-physician communication and increasing HIV testing through a text message intervention.

Low health literacy leads to poor patient-physician communication and worse health outcomes

Health literacy is “the degree to which individuals have the capacity to obtain, communicate, process, and understand basic health information and services needed to make appropriate health decisions.”¹ According to the 2003 National Assessment of Adult Literacy, over 36% and 14% of U.S. adults have below intermediate and below basic health literacy, respectively.² Racial and ethnic minorities are most impacted by low health literacy, with 41% of Hispanics and 24% of African-Americans having below basic health literacy.² Patients with low health literacy make less use of preventive healthcare services^{3,4} and

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suffer worse health outcomes.^{5,6} Moreover, as noted by the American Medical Association, patients with poor health literacy have poor communication with their physicians, leading to poor health outcomes.⁷ Interventions aimed at improving patient-physician communication positively correlate with improved health.⁸

Mobile health could improve patient-physician communication

As noted by former U.S. Department of Health and Human Services Secretary, Kathleen Sebelius, in her keynote address at the annual Mobile Health (mHealth) Summit, mobile technologies are “opening up new lines of communication between patients and their physicians” and are an innovative strategy to engage traditionally hard-to-reach populations such as racial and ethnic minority communities.⁹ mHealth could be an innovative way to overcome health literacy barriers because of its reach: mobile phone ownership is ubiquitous across race, ethnicity, education, and income levels.^{10,11} The Institute of Medicine Roundtable on Health Literacy's Collaborative on New Technologies highlighted how the ubiquity of mobile phones is closing the digital divide faced by many low health literacy patients.¹² mHealth offers potential to engage patients with low health literacy by conveniently delivering relevant health information that could improve patient-physician communication.

Text messaging is the most common activity performed on a mobile phone, with 81% of mobile phone owners sending and receiving text messages.¹¹ Thus, text messaging is an ideal platform for delivering health interventions to patients. Studies have found that text messages have been successful at promoting patient-physician communication,¹³ smoking cessation,^{14,15} weight loss,^{16,17} and immunization coverage.¹⁸ This may be because text messages have several salient health promotion features, especially beneficial for low health literacy patients. mHealth text messages can be: 1) written in simple text, 2) personalized based on the patient's health literacy level, and 3) interactive to facilitate communication between patient and physician. Based on these many aspects, text message interventions hold great potential to engage patients and improve communication between patients and physicians.

Adopting text messages to empower patients with low health literacy

Government agencies have highlighted the importance of designing health interventions that are appropriate for patients with low health literacy. The U.S. Department of Health and Human Services' *Quick Guide to Health Literacy* recommends using health literacy strategies, such as improving the usability of and access to health information.¹⁹ Additionally, the Agency for Healthcare Research and Quality's *Health Literacy Universal Precautions Toolkit* recommends using patient feedback to evaluate the usability of the health information presented.²⁰ Finally, the U.S. Department of Health and Human Services' *National Action Plan to Improve Health Literacy* emphasizes targeting and tailoring communication in health interventions and the use of User-Centered Design (UCD).²¹ UCD employs strategies for end-users to influence iterative prototypes of a product (Figure 1).^{22,23} Although UCD strategies are generally employed in products more complex than

text messaging, UCD offers valuable insight to ensure text messages result in increased patient-physician communication, and positive and sustained health engagement.

Challenges to note in developing a text message intervention

Certain challenges may exist in text message interventions; however, these challenges can be addressed if they are identified early in campaign development. First, although text messaging transcends race, ethnicity, education, and income levels,¹¹ text messaging is not pervasive among the elderly. Compared to over 94% of adults 18-49 years who own a cell phone use text messaging, only 35% of adults over 65 years who own a cell phone use text messaging.¹¹ However, older adults are increasingly using text messaging. In 2013, 35% of adults 65 years or older used text messaging, compared to only 11% of adults in this age group in 2009.²⁴ Based on current trends, mHealth interventions targeting older adults may be better suited for these end-users as their familiarity with text messaging increases. Second, the privacy and security of patient information sent over text message should comply with local and national regulations (e.g. the U.S. Health Insurance Portability and Accountability Act of 1996). Additional research is needed to identify risks associated with text messaging;²⁵ updated security measures and regulations may need to be implemented.²⁶ Third, it is important to note that text messages are limited to 160 characters. While text messages can effectively reach target audiences, the campaign message must be succinct enough to convey the intended information. Similarly, costs may be incurred by the end-user in receiving text messages. However, one in three U.S. adults have unlimited text plans, limiting the patients who will have to bear a cost burden.²⁷ Finally, mHealth interventions may not always improve health to the full expectations of the campaign designers. For instance, Sweet Talk, a text message system that supported adolescents with diabetes, did not improve glycemic control.²⁸ However, the system improved additional goals of the campaign: diabetes self-efficacy and self-management.²⁸ Despite these limitations, strategic text message campaigns have been successfully implemented internationally and could be used as a model.^{13-18,29,30} Text message campaign designers should be flexible and aware of the abilities and preferences of the target audiences.

Exemplar: Text messaging could engage patients and increase HIV testing

The HIV epidemic continues in the U.S. as approximately 50,000 persons contract HIV each year.³¹ HIV disproportionately affects racial and ethnic minorities. Despite national recommendations for routine HIV testing,^{32,33} several reports highlight that physicians are not recommending HIV testing to their patients – even those at highest risk for HIV³⁴⁻³⁸ Interestingly, patients want and expect HIV testing to be done and want their physician to test them.³⁹ Conversely, physicians want their patients to ask them for the HIV test.⁴⁰

Health literacy impacts HIV health disparities.⁴¹ Low health literacy and poor patient-physician communication are associated with poorer HIV knowledge.⁴² Low health literacy may be a contributing factor to low HIV testing rates, particularly among the racial and ethnic minority communities hardest hit by the HIV epidemic. Because studies have found that text messages can promote patient-physician communication,¹³ HIV informational text messages could motivate patients to ask their physicians about the HIV test. This

intervention could thereby increase patient-physician communication and HIV testing. A study of predominately African-American patients found that 77% of them felt they could be convinced by a text message to get HIV tested.⁴³ Unlike static HIV testing campaigns, such as those on billboards, HIV text message interventions could be sent near the time of patients' appointments with their physicians. Targeted text messages could revolutionize preventive health practices, such as HIV testing, by facilitating communication between low health literacy patients and their physicians.

Conclusion

As highlighted in the Institute of Medicine report *Health Literacy: A Prescription to End Confusion*, the health system has significant opportunity and responsibility to improve health literacy.⁴⁴ The health system should capitalise on the potential of mHealth to engage people in their health and overcome some of the barriers faced by patients of low health literacy. Despite the proven positive effects that mHealth campaigns have had on health behaviors,^{13,45,46} mHealth as a patient-empowerment tool remains in its infancy. More research is needed on the ability of mHealth to improve health for the hardest-to-reach populations, such as those with low health literacy. Successful mHealth strategies should incorporate health literacy strategies^{19–21} and user-centered design.^{21,23} Prompting patients with a simple health message before their physician appointment could motivate patients to talk to their physician about a pertinent health issue, thus overcoming low health literacy barriers. Utilizing mHealth specifically for HIV testing, as in the exemplar provided, could achieve several Healthy People 2020 objectives: improve patient-physician communication, improve HIV testing, and increase use of mHealth.⁴⁷

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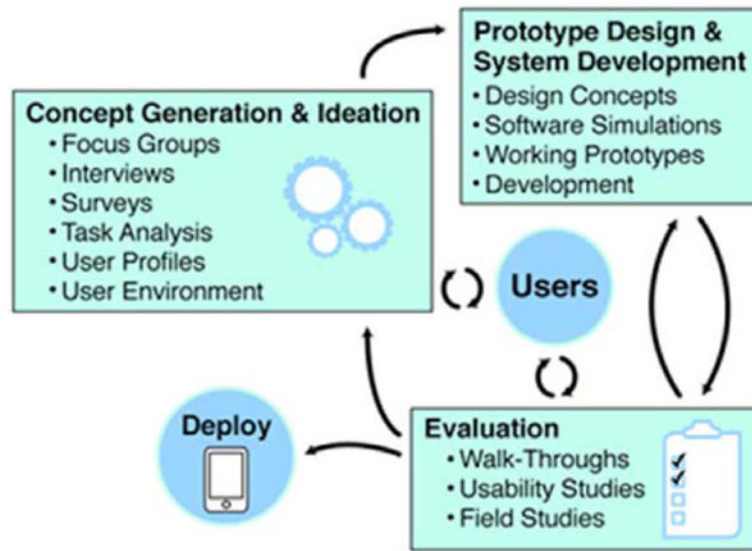


Figure 1. The User-Centered Design Process²³ (Adapted from McCurdie et. al)