

To Friend or Not to Friend: Using New Media for Adolescent Health Promotion

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The new forms of electronic media have become the air that adolescents breathe. For more than seven hours per day, which is almost the amount of time most adults spend at work, adolescents are using some form of media.¹ Indeed, it is difficult to imagine an adolescent without the ubiquitous cell phone, MP3 player, gaming device, or computer. In fact, the average adolescent in the United States owns more than three such devices.² Although television is still the medium used most frequently (approximately four hours per day), newer forms of media that are digital, more interactive, and more mobile are increasingly attractive to adolescents. These “new media” include Web sites, online social-networking platforms (eg, MySpace, Facebook, and Twitter), computer-based multimedia (eg, CD-ROMs and DVDs) and games, and smart phones that provide Internet access. Although in-home Internet access and quality varies slightly by race, ethnicity, and socioeconomic status, the digital divide is narrowing quickly, and nearly all adolescents report going online at home or school.²

New-Media Opportunities for Adolescent Health

Health practitioners and researchers in North Carolina are beginning to see that many young people prefer new media as an effective way to communicate about health. More than 100 youth and their trusted adults at the town hall event in November 2009 for the Adolescent Health Initiative, a partnership between the Durham County community and Duke University Medical Center, said that text

messaging and social media such as Facebook were their first choices for a community intervention to improve adolescent health.

The Adolescent Pregnancy Prevention Campaign of North Carolina (APPCNC) is successfully reaching teens across the state with the BrdsNBz text-messaging service, which addresses questions about sexual health (available at: <http://www.appcnc.org>). Teens can text their question to BrdsNBz, and an APPCNC staff member provides a medically accurate answer within 24 hours. Other uses of new media for health have been shown to have high levels of acceptability among youth.³

Online, mobile, and multimedia adolescent health interventions have numerous advantages. New-media communication may increase content retention because it facilitates active, participatory learning. Diverse styles of learning among users can be accommodated by presenting information in multiple modalities, such as audio, text, graphics, and video. Tailored or individualized content based on user characteristics is also possible. The perceived anonymity of online and mobile media also may facilitate discussion of potentially embarrassing health topics, such as sexual health. Although multimedia interventions may have more up-front development costs, lower costs for replication and personnel may result in long-term cost savings.

New media are being used for adolescent health promotion in at least five ways: health education and behavior change, disease management, health service referral, health service delivery (eg, telemedicine), and health advocacy.

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BrdsNBz: A Text-Messaging Forum for Improving the Sexual Health of Adolescents in North Carolina

Kay R. Phillips

The BrdsNBz Text Message Warm Line (hereafter, "BrdsNBz") was launched by the Adolescent Pregnancy Prevention Campaign of North Carolina (APPCNC) in February 2009 to address the sexual-health needs of our state's teenage population. The primary objective of BrdsNBz is to provide a trusted forum for adolescents to ask questions and receive medically accurate information about their sexual health. Of importance, the program engages adolescents "on their turf," using technology, social networking, and texting to ascertain their specific needs and provide targeted, positive messages promoting sexual health. The APPCNC accomplishes this by using a simple, yet highly effective platform—text messaging. BrdsNBz was initially designed to engage adolescents aged 14 to 19 years in areas of North Carolina where resources are limited. The service was also developed as a response to increased rates of teen pregnancy and sexually transmitted infections (STIs), including human immunodeficiency virus (HIV) infection, to create a simple solution to the monumental problem of providing accurate information to youth in a format that is suitable to their lifestyle. BrdsNBz provides a safe and anonymous forum for adolescents to ask questions about their sexual health and receive informed, medically accurate, and prompt responses.

Data on teen pregnancy in North Carolina underscore the magnitude of the need for such a service. For example, in 2007, more than 20,000 females aged 15 to 19 years became pregnant, and for 29%, the pregnancy was not their first.¹ These pregnancies, most of which are unintended, not only carry a set of responsibilities that most adolescents are not prepared to assume, they are also linked to a multitude of other short-term consequences, including increased school drop-out rates, poor academic performance, and risk for

additional unintended pregnancies. Longer-term impacts of unplanned pregnancy among teens include adult poverty, reduced workforce readiness, and decreased overall child and family well-being. Individuals who may feel unaffected by this issue unknowingly bear the burden, as well. Unplanned teenage pregnancies in North Carolina cost taxpayers \$312 million each year.²

By design, the logistics of how to use BrdsNBz are quite easy to master. To match the on-demand nature of text messaging among teenagers, the APPCNC responds to the question posed in the text message within 24 hours. Keeping the teens engaged through a question-and-answer format mediated by text messaging often leads to follow-up questions on related topics that were not included in the initial text.

Venues in which BrdsNBz is advertised include the APPCNC Web site (available at: <http://www.appcnc.org>), the Advocates for Youth's Teen Leadership Council Web site, and Amplify (available at: <http://www.amplifyyourvoice.org/main.cfm?s=amplify>); banner-based advertising is purchased on MySpace (available at: <http://MySpace.com>). Although these venues have been fruitful, the MySpace advertisements achieve the highest rates of response, as noted by the increase in the number of texted questions at the beginning of each month, coinciding with appearance of the banner advertisements. However, these advertisements are extremely expensive, which creates an opportunity for the APPCNC to identify and establish new, cost-effective methods by which to market the service. Other nonprofit organizations that support the APPCNC and its work also cross-promote BrdsNBz on their Web sites, as well as through other marketing programs.

Health Education and Behavior Change

Online, mobile, and multimedia platforms are increasingly used for health education and behavior-change interventions for adolescents. Numerous nonprofit and for-profit organizations operate Web sites containing health information, and some are tailored specifically to adolescents. Many of these Web sites allow users to confidentially ask questions and receive a direct response that is often later posted anonymously for the general readership. Other features include Weblogs (hereafter, "blogs") or Twitter feeds for users to follow. Twitter and blogging are less popular on average among adolescents, with only 8% to 14% of persons younger than 18 years reporting use.² Such new forms of communication may be more effective with young adults aged 18 to 29 years because one-third of individuals in this age group report Twitter use.

Many adolescents report that they seek health informa-

tion online. Almost one-third (31%) of US teens who completed surveys about online habits said that they get health information from the Internet, and 17% reported looking for information online about health topics, such as drug use and sexual health, that are hard to discuss with others.² Attracting adolescents to a specific Web site is a central challenge of providing health information online. An evaluation of the I wanna know! Web site (available at: <http://www.iwannaknow.org>), which is aimed at the prevention of sexually transmitted infections (STIs), revealed more than 50,000 users in a three-month period, but fewer than half were of the target age of less than 18 years.⁴

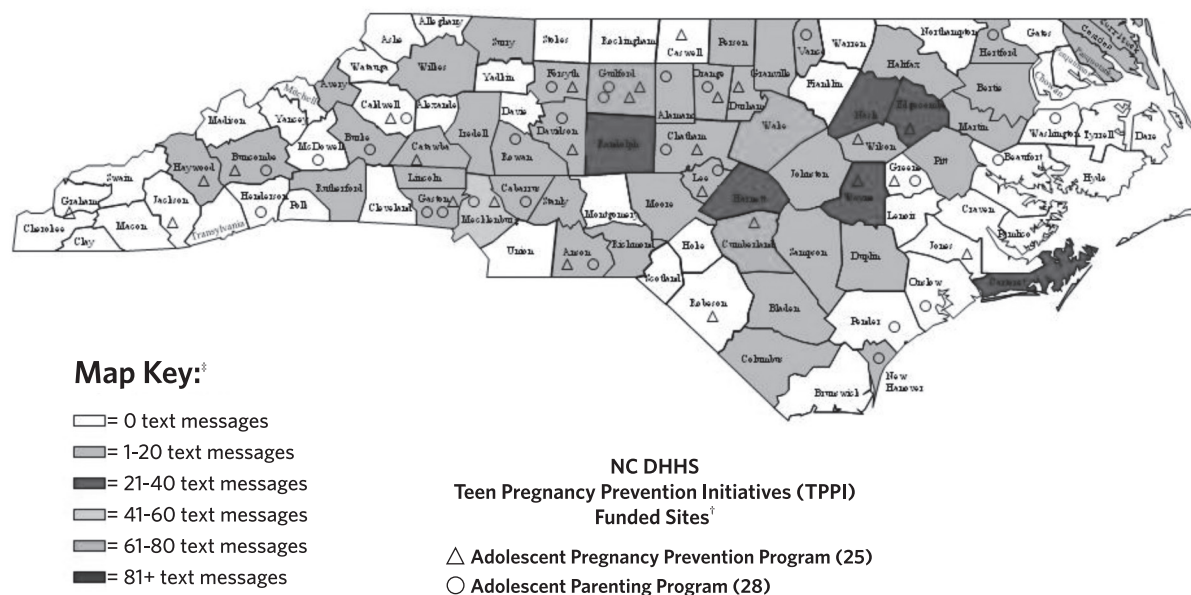
Interventions that rely on theories of health behavior change to alter behavior may require prolonged contact with the user and more-complicated and more-interactive programming. Computer-delivered interventions can be administered via the Internet or via CD-ROMs and DVDs. A number of such interventions have been effective in chang-

BrdsNBz has garnered national attention from newspapers, magazines, and local, state, and national television affiliates.³⁻⁸ In addition, the APCNC receives requests weekly from organizations across the United States (and from around the world) for information on how to tailor this service to their target populations.

Formative research conducted in cooperation with Dr. Jane Brown and investigators at the University of North Carolina at Chapel Hill School of Journalism and Mass Communication found that adolescents not only felt they could trust the service but were more likely to follow-up on an answer from

BrdsNBz than from other resources they were exposed to in schools, at home, or in the community.^{9,10} At the same time, Brown and colleagues also emphasized the need for BrdsNBz to reach areas in the state that demonstrate the greatest need—primarily rural, outlying communities in northeastern, southeastern, and western North Carolina. In support of this assertion, Figure 1 shows data from the pilot phase of the project that demonstrate the frequency of BrdsNBz use across North Carolina. Figure 1 also highlights locations that have primary or secondary teen pregnancy prevention programs in place via funding from the North Carolina Department of Health and Human Services.

Figure 1.
BrdsNBz Use and Teen-Pregnancy Prevention Sites Across North Carolina



‡Pilot data 2/1/09 to 5/15/09

†June 1, 2009 – May 31, 2010

ing knowledge, attitudes, and behavior in many health areas. Female adolescents rated our interactive CD-ROM about STI prevention, *Let's Talk About Sex*, as highly acceptable during pilot testing in the clinical setting.³ Test takers increased their STI knowledge, and nearly all intended to use condoms at next intercourse after viewing the CD-ROM.

Despite demonstrated effectiveness, computer-based multimedia interventions are not frequently used in health care and community settings. Health care professionals face numerous barriers to their use, including poor reimbursement for health education, limited awareness and access, and logistical challenges, including short patient visits and limited computer availability.^{5,6}

Cell phone-delivered interventions have been developed to keep pace with the explosion of mobile devices and have been effective in many health interventions, including tobacco-cessation programs.⁷ Most interventions include

personalized text messages and reminders sent at varying time intervals. An innovative North Carolina program combines text messaging with social networking. The Durham County Health Department (DCHD) operates the community-wide Knowing Is Sexy reproductive health intervention on Facebook (available at: <http://www.facebook.com/pages/Durham-NC/Knowing-Is-Sexy/68885537876>); a free, text message-based advice line; and a teleconferencing consulting service. The Facebook page was launched in Spring 2009 and attracted 500 fans in one year, one-third of whom were in the targeted age group of 13 to 24 years. More than half of persons who underwent STI testing at DCHD-supported events reported hearing about the event via Facebook.⁸ After users reported that they did not ask questions via the Facebook site because of a lack of anonymity, the text message-based advice line and an option to schedule a counseling session via a free teleconferencing service (ie, Skype) were added.

As BrdsNBz moves into its second year of service, the APPCNC will focus on promoting the service in underserved parts of the state. BrdsNBz seeks to become a more universally available and accessible resource to all individuals in North Carolina aged 14 to 19 years. Ideally, the APPCNC will experience an increase in the number of text messages sent

from underserved counties that have limited resources. For example, a pilot study of BrdsNBz conducted from February 1 through May 15, 2009, found that 70% of incoming texts were sent from western North Carolina and from the region east of (and including) Chapel Hill (Table 1). North Carolina cities demonstrating the lowest frequency of BrdsNBz use

Table 1.
BrdsNBz Use During Its Pilot Phase, by Area Code and Exchange

Area Code	OR (95% CI)	Text messages, no. % (N=597)
252	Elizabeth City, Greenville, Havelock, Henderson, Kinston, Morehead City, New Bern, Roanoke Rapids, Rocky Mount, Tarboro, Washington, Wilson	111 (18.6)
336	Asheboro, Burlington, Clemmons, Eden, Graham, Greensboro, High Point, Kernersville, Lewisville, Lexington, Mount Airy, Reidsville, Roxboro, Summerfield, Thomasville, Trinity, Winston-Salem	68 (11.4)
704	Albemarle, Charlotte, Concord, Cornelius, Davidson, Gastonia, Huntersville, Indian Trail, Kannapolis, Kings Mountain, Lincolnton, Matthews, Monroe, Mooresville, Mount Holly, Salisbury, Shelby, Stateville	66 (11.1)
828	Asheville, Black Mountain, Boone, Brevard, Conover, Forest City, Hendersonville, Hickory, Lenoir, Morganton, Newton, Waynesville	19 (3.2)
910	Clinton, Dunn, Fayetteville, Fort Bragg, Hamlet, Hope Mills, Jacksonville, Laurinburg, Lumberton, Oak Island, Pinehurst, Rockingham, Southern Pines, Spring Lake, Wilmington	154 (25.8)
919	Apex, Cary, Chapel Hill, Clayton, Durham, Fuquay-Varina, Garner, Goldsboro, Mebane, Oxford, Raleigh, Sanford, Siler City, Smithfield, Wake Forest, Wilson	148 (24.8)
980	Charlotte, Concord, Gastonia, Huntersville, Kannapolis, Matthews, Monroe, Salisbury, Statesville	31 (5.2)

Note. Data are from February 1 through May 15, 2009.

Disease Management

New media can provide an alternative presentation method and communication link for chronic-disease management. Examples of the use of new media include posting educational materials online, providing virtual support groups via social-networking sites, sending reminders for appointments and daily medications by means of text messages or e-mails, collecting health information (eg, logs of blood glucose levels and peak expiratory flows), adjusting medications, and providing counseling. Cell phone and text-messaging interventions have been shown to improve medication adherence, appointment attendance, asthma symptoms, and, in diabetic patients, HbA1C levels.⁵ Planned Parenthood of Central North Carolina operates one such service, a text message-based medication reminder called Pill Pixy (available at: <http://www.plannedparenthood.org/centralnc/pill-pixy-31056.htm>). Users of this service receive daily text reminders to take their birth control pills.

Researchers in the University of North Carolina Eating Disorders Program have launched a successful online pro-

gram aimed at the prevention and early intervention of eating disorders among college students in North Carolina. Participants in the PACE (Pathway to Awareness in College Eating) intervention (available at: <http://www.pace.unc.edu>) have access to modules offering psycho-education on topics ranging from stress in college to eating disorders, short activities designed to promote cognitive dissonance about disordered eating, weekly self-monitoring with automated feedback, and counselor-led group and individual chat sessions. PACE also strives to detect students who may need more-intensive care and refer them for face-to-face treatment. More than 100 students have participated in PACE since Fall 2009.

Health Service Referral

Existing health services can be difficult for adolescents to access. For example, the Durham County Adolescent Health Initiative's community health assessment documented many adolescent-focused services, but many adolescents, parents, and health care professionals were not aware of or did not know how to access these services (unpublished data).

included Asheville, Black Mountain, Boone, Brevard, Conover, Forest City, Hendersonville, Hickory, Lenoir, Morganton, Newton, Waynesville, Charlotte, Concord, Gastonia, Huntersville, Matthews, Salisbury, Kannapolis, Monroe, and Statesville. Hence, these areas will be a focus of the second-year expansion to increase use.

Texting is extremely common among teens in North Carolina and across the world, allowing the APPCNC to keep a finger on the pulse of issues that are most salient to our state's youth. Through the text-messaging line, the APPCNC aims to indirectly increase teenagers' knowledge and awareness

of accurate sexual health information, as well as their quality of life, by reducing the incidence of unintended pregnancies and STIs. Text-messaging technology provides a great opportunity to provide teens with free, confidential, and accurate information about their sexual health. The APPCNC will continue to take advantage of this novel, yet simple, approach to promoting positive outcomes for adolescents in North Carolina. **NCMJ**

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New media can be used for efficient referrals to relevant resources. One innovative example is a joint program of the San Francisco Department of Public Health and ISIS called SEXINFO, a text-messaging system that provides sexual health information and referrals.⁹ Youths text a five-digit phone number and get a basic response to their question and/or a list of services available for face-to-face consultation. Examples include texting C3 "to find out about STDs," E9 "if ur sexually active," F10 "if someone's hurting u," and E5 if there is a "need to speak to someone now."

Online directories are another example of the use of new media for health service referral. Two examples in North Carolina include Durham County's Network of Care (available at: <http://durham.nc.networkofcare.org/family/home/>) and North Carolina Health Info (available at: <http://www.nchealthinfo.org>), a statewide directory operated by the University of North Carolina Health Sciences Library. Challenges to online directories include raising and maintaining awareness of the Web site among clinicians and community members, creating user-friendly formats and features, and keeping information constantly updated.

Service Delivery

Virtual communication via new media can be especially beneficial for communities lacking health services. Telemedicine is the use of telecommunications technology for medical diagnosis and patient care at a distance. Patient care can be provided using videoconferencing and specially equipped biologic monitors and cameras. Telemedicine programs based in schools have been found to decrease emergency department visits and diabetes- and asthma-related hospitalizations.¹⁰ Mental health and health education professionals in particular have been early adopters of videoconferencing technology. Mental health teleconferencing services are currently provided in select Durham public schools by clinicians in the Duke University Medical Center Division of Child Development and Behavioral Health and in Mitchell and Yancey County schools through the MY Health-e-Schools program (available at: <http://www.myhealthschools.org/Home>), with plans to expand to physical health care.

Health Advocacy

Web sites, social-networking platforms, blogs, and Twitter

are particularly suited for mobilizing youth and the community for advocacy related to adolescent health issues. Planned Parenthood of Central North Carolina's Choice 2.0 blog (available at: <http://www.plannedpcnc.org/blog>) encourages readers to contribute to conversations about reproductive health. Their Twitter feed (available at: <http://www.twitter.com/PPCNC>) about the passage of the North Carolina Healthy Youth Act of 2009 offered an insider perspective on the legislative process.

Conclusion

Adolescents spend much of their day using new media. Health professionals can effectively use Web sites, social-networking platforms, multimedia, and mobile media to educate, refer, advocate for, and even treat adolescents.

Many innovative programs are underway across the state. Initial studies of their reach and effectiveness suggest that

new media can augment and extend existing programs and, in some cases, can reach teens who may not be reachable in other ways. Challenges include making adolescents and health care professionals aware of new media-based services, encouraging them to use these services, keeping services updated and user-friendly, and ensuring sufficient reimbursement for health care services provided to patients via new media. As these challenges are addressed, health professionals should harness the power of new media to improve the health of North Carolina's adolescents. **NCMJ**

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