

Improving Patient–Clinician Communication About Chronic Conditions

Description of an Internet-Based Nurse E-Coach Intervention

Marybeth Allen ▼ Lisa I. Iezzoni
Annong Huang ▼ Linchang Huang
Suzanne G. Leveille

- ▶ **Background:** Studies show that patients who have higher self-efficacy and participate actively in their care have better disease management. Patient–provider Internet portals offer an exciting new venue for empowering and engaging patients in better management of chronic conditions.
- ▶ **Objectives:** To describe development of an Internet-based health coaching intervention.
- ▶ **Approach:** An Internet-based health coaching intervention to enhance patient–provider communication regarding three common conditions, chronic pain, depression, and impaired mobility, was developed. Using principles of self-management, the intervention aimed to engage and empower patients to collaborate with their primary care physician in managing their health conditions. Delivered online by nurse electronic coaches (e-coaches), the intervention involved a standardized set of e-mails and worksheets targeting self-efficacy, patient education, and motivation to improve health.
- ▶ **Results:** Participants in the intervention ($N = 121$) primarily used the automated elements of the program, although 35% exchanged e-mails with the nurse e-coach. Most patients (88%) who contacted the e-coach were interested in further coaching. Patients who viewed the online worksheets did so repeatedly; 42 patients opened the worksheets 107 times prior to the visit.
- ▶ **Discussion:** The Internet-based coaching intervention departs substantially from usual nursing care but warrants further study given its potential to offer considerable benefits to large numbers of patients. Several challenges were identified to providing patient coaching and self-management support via the Internet, but this efficient and low-cost approach offers an innovative opportunity to improve patient–clinician partnerships in managing chronic conditions. As patients become more accustomed to electronic communication, nurses can play an important role, joining efforts to develop this new realm to promote patients as partners in managing their health conditions.
- ▶ **Key Words:** internet • nursing • primary healthcare

The prevalence of chronic diseases has risen in the United States, which means that more patients find themselves managing chronic health conditions on a daily basis, and their quality of life is dependent on their ability to do so. Patients who are involved in their own care and motivated to manage chronic health conditions

Marybeth Allen, BS, RN, was Lead Clinical Nurse, Healthcare Associates, Beth Israel Deaconess Medical Center, Boston, Massachusetts.

Lisa I. Iezzoni, MD, MSc, is Professor of Medicine, Harvard Medical School, Boston, Massachusetts, and Associate Director, Institute for Health Policy, Massachusetts General Hospital, Boston.

Annong Huang, MD, PhD, is Statistical Programmer, Division of General Medicine and Primary Care, Beth Israel Deaconess Medical Center, Boston, Massachusetts.

Linchang Huang, PhD, is Developer, Applied Informatics, Information Systems Department, Beth Israel Deaconess Medical Center, Boston, Massachusetts.

Suzanne G. Leveille, PhD, RN, is Assistant Professor of Medicine, Division of General Medicine and Primary Care, Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, Massachusetts.

have better disease outcomes and greater satisfaction with symptom control (Lorig et al., 1999; Wagner et al., 2005). Literature on shared decision making and chronic disease management suggests that patient activation and self-efficacy are critically important for effective patient participation in care (Bodenheimer, Lorig, Holman, & Grumbach, 2002; Lorig, Sobel, Ritter, Laurent, & Hobbs, 2001). Many chronic disease self-management interventions are rooted in Bandura's Social Cognitive Theory that posits that self-efficacy, or sense of self-confidence about performing a task, strongly influences self-care behaviors (Bandura, 1977). Studies suggest that higher self-efficacy contributes to better health status, including improved well-being, improved self-rated health, and reduced depression and mortality (Gill, Robison, & Tinetti, 1997; Hardy & Gill, 2005; Mendes de Leon, Seeman, Baker, Richardson, & Tinetti, 1996).

The advent of Web-based patient-doctor communication has opened new opportunities to support patients and promote self-management skills. Communication between doctors and patients through e-mail has evolved quickly in recent years and has been studied from the perspectives of both patients and physicians. In this electronic medium, nurses have played a limited role, generally complementary to Internet information or programs but not integral to the programs themselves (Bennett et al., 2005; Shenk & Hartley, 2002; Whittemore, D'Eramo Melkus, & Grey, 2005; Wise et al., 2007). A new intervention was developed that allowed primary care patients to interact with a nurse electronic coach (e-coach) through a secure Internet portal. In the intervention described in this article, nurse e-coaches were used to activate and engage primary care patients via e-mail communication, a substantial departure from direct-contact roles nurses have served historically.

PatientSite (<http://www.patientsite.org>) is a patient-oriented Internet-based portal serving more than 30,000 patients of a large Boston-based academic medical center and its affiliates in Eastern Massachusetts. As a secure site, it enables patients to communicate via electronic messaging with their clinicians and office staff and to access

their medical records. The site provides an efficient venue for communication and has the capability to deliver new programs to improve chronic disease management (e.g., by empowering patients in managing their own health and chronic conditions).

Approach

The new nurse e-coach intervention was tested in a randomized controlled trial. In this presentation, the development and implementation of the e-coach intervention are described. Initially, 34 primary care doctors in the hospital-affiliated practices were recruited and enrolled into the study. From August 2005 through August 2006, a computer algorithm designed for this research was used to send electronic invitation messages to patients who were users of PatientSite 4 weeks prior to scheduled primary care appointments with participating physicians. Patients completed an informed consent electronically, and those agreeing to participate received an online screening survey. Persons screening positive for one or more of three chronic conditions—chronic musculoskeletal pain, depressive symptoms, and difficulty with mobility—met eligibility criteria and were randomized immediately to either the intervention or control groups. These conditions were chosen because they can be chronic and disabling and have high prevalence among primary care patients in the practice. All aspects of patient participation were conducted over the Internet, including recruitment, screening, enrollment, intervention and control procedures, and follow-up surveys.

The focus of the Internet-portal-based intervention was to improve the care of adult primary care patients with chronic pain, depression, or difficulty walking. The specific aim of the intervention was to improve patient-reported quality of life, diagnosis and treatment of the three conditions, patient-clinician communication, and satisfaction with primary care. Consistent with social cognitive theory (Bandura, 1977), the aim was to achieve these objectives through empowering patients to work collaboratively with their primary care doctors and encouraging them to set goals for their healthcare visits. The

intervention was designed to promote patient self-efficacy specifically in the domain of communication with providers. Patients were guided to organize their thoughts and find constructive ways to communicate their health priorities through nurse e-coach e-mailed advice and tools offered entirely through the secure PatientSite Internet portal.

Principles of shared decision making and self-management were applied in developing the intervention (American Academy of Family Physicians, n.d.; Flinders Human Behavior and Health Research Unit, Flinders University School of Medicine, n.d.; Foundation for Informed Medical Decision Making, n.d.; Lorig & Holman, 2003; Saba et al., 2006). Patients in the intervention group automatically received an initial welcome e-mail from the e-coach. Because of the relatively short time frame to deliver the intervention, it was challenging to provide succinctly as much targeted information as possible. A set of e-mails was created based on the possible combinations of the three screened conditions, and patients received the e-mail appropriate to their individual screening results. For example, if a person screened positive for depression and chronic pain, then the automated initial e-mail from the e-coach addressed these two conditions.

Many factors contribute to the underdiagnosis of chronic conditions, including problems with patient-clinician communication, providers' lack of awareness of the prevalence of these conditions or knowledge on how to screen for them, and lack of time in a brief office visit (Marvel, Epstein, Flowers, & Beckman, 1999). Conditions such as depression and chronic pain may be difficult to evaluate in very short office visits. In addition, patients themselves may decide that problems such as mobility difficulties are an inevitable consequence of aging and that physicians can do little to help (Iezzoni, 2003). An important aim of the study was to improve detection of the three chronic conditions. It was expected that, by informing patients of their screened condition, coupled with motivational e-coaching messages, patients would be more likely to discuss their condition with their clinician during their upcoming visit.

Diagnoses were not offered in the e-coaching messages. Instead, e-mails described the conditions as “having a problem with nervousness or your mood,” “chronic or long-term pain,” “trouble with walking and getting around,” or a combination of these. The initial messages from the e-coach contained very brief information about the screened condition. The content and goals of the initial e-mails are summarized in Table 1.

The e-mail provided patients with a link to a personalized Web site, also within PatientSite, that included printable worksheets designed to supplement e-coaching. To design these visit preparation worksheets, published and online resources for patients related to the screened conditions were searched and many government agencies and private disease-focused organizations were found that offered patient-friendly information through their Web sites (Klinkman, 2003; Ludman et al., 2003; MacArthur Initiative on Depression and Primary Care at Dartmouth and Duke, n.d.; National Depressive and Manic-Depressive As-

TABLE 1. Content and Goals of Initial Automated Nurse Coach E-mail

1. Acknowledgement of screened condition or conditions
2. Brief information about condition or conditions
3. Encouragement to plan for treatment
4. Empowerment of patient to promote self-advocacy and communication with doctor
5. Link to personalized Web site with condition-specific information and worksheets
6. General tips for planning the office visit
7. Invitation to engage nurse e-coach for individualized email coaching

sociation, 2000; National Institute of Mental Health, n.d.; National Institute on Aging, 2002; Paico, 2005; Sansone & Sansone, 1996; U.S. Food and Drug Administration, n.d.). After

reviewing the available information, worksheets were developed for the intervention, consistent with the motivational self-management focus. Two worksheets contained general information about organizing visit priorities, and others applied specifically to the screened conditions. The e-coach e-mail encouraged participants to print and complete the worksheets and to bring them to the office visit. The worksheets available to the 121 intervention participants and the number of individuals who accessed each worksheet are shown in Table 2.

Two experienced clinic nurses conducted the intervention, jointly monitoring the e-coach inbox on the Internet portal. To maintain consistency in the intervention, templates were created for responses to messages from patients. First, based largely on the extensive clinical experiences of the nurse investigators, a set of anticipated patient responses to the initial e-coach e-mail were developed and then a set of templates were produced to provide standardized content for the e-coach responses. Each e-mail concluded with

TABLE 2. Worksheets Offered to Intervention Patients

Worksheet	Link describing worksheet on the Web site	Format and content	Access criteria ^a	Use (121 patients)
New Symptom or Condition Form	“This form can help you to describe a new symptom that you are having to your doctor.”	General set of questions to describe symptom history and presentation; 11 open-ended items	All	24
Appointment Planner	“This form can help you organize your visit with your doctor. It has space to list your goals, and an area to write down information that you should have before you leave the doctor’s office.”	Form to summarize visit goal, treatment plan, and recommendations of primary care provider	All	31
Tips for Planning a Health Visit	“Tips for Planning a Health Visit”	Planning, goal setting, and general questions for primary care provider	All	39
Pain Description worksheet	“Pain can be difficult to describe. This worksheet has hints for describing the pain that you may be having.”	Self-assessment; 6 open-ended items to address pain characteristics	Positive screen for chronic pain	38
Mood Description Worksheet	“Mood can affect your daily life in many ways. This worksheet helps you to describe some of the ways that mood may be affecting your daily activities.”	Self-assessment checklist; 11 items addressed depressive symptoms	Positive screen for depression	5
Mobility Assessment Worksheet	“This is a checklist to help you determine how your ability to get around may be impacting your life.”	Self-assessment checklist; 10 items to address causes and consequences of mobility difficulty	Positive screen for lower extremity mobility difficulty	5

Note. ^aIf participants screened positive for more than one condition, they had access to all relevant condition-specific worksheets.

an invitation to contact the e-coach nurse online for further assistance.

Results

Description of Participants

An earlier study of PatientSite users showed that, in general, they are younger (though 7% are at least age 65 years or older) and healthier than nonusers and are more likely to be White (Weingart, Rind, Tofias, & Sands, 2006). The 121 intervention participants ranged in age from 22 to 82 years, with 60% aged 50 years and older. More than half were women (59%), most were White (91%), and 69% had attended 4 or more years of college (Table 3). The most common screened condition was chronic pain (88% of those who screened positive for any condition) followed by mobility difficulty (21%) and depression (11%), with 17% meeting criteria for more than one condition.

Use of Intervention Components

The most popular components of the intervention were the automated and prepared elements such as the Web site and the online worksheets. Half of the participants opened the intervention Web site before their doctor visit. Among those who viewed the Web site, 42 individuals (71% of Web site users) opened the worksheets 107 times in the days prior to their doctor visits. Of the 121 participants, 42 (35%) sent 62 e-mails to the e-coach prior to their primary care appointments.

Most patients who sent an e-mail to the e-coach were interested in further coaching in preparation for their primary care physician visit (88%). The e-coach nurses most commonly (48% of messages) sent the e-mail template encouraging patients to set a goal for their visit, making minor edits of one-third of these templates. The next most frequently used template (20% of e-mails) encouraged patients to work collaboratively with their physician and to assess effectiveness of any interventions continually, changing or adjusting their goals and plan based on their progress.

The more detailed e-mail responses from participants included beliefs about the purpose of the upcoming doctor visit. For example, a patient described her upcoming appointment as her

TABLE 3. Demographic and Other Characteristics of Intervention Participants (N = 121)

Characteristics	n (%)
Age (years)	
20–39	21 (17.4)
40–49	27 (22.3)
50–59	43 (35.5)
60+	30 (24.8)
Sex	
Male	50 (41.3)
Female	71 (58.7)
Race ^a	
White	109 (90.8)
Black	7 (5.8)
Other	4 (3.3)
Hispanic ethnicity	2 (1.7)
Education	
High school or less	8 (6.6)
College 1–3 years	30 (24.8)
College 4+ years	39 (32.2)
Graduate degree	44 (36.4)
Marital status	
Married or lives as married	74 (61.2)
Not married	47 (38.8)
Employment	
Employed	88 (72.7%)
Homemaker	3 (2.5%)
Out of work	1 (0.8%)
Retired	19 (15.7%)
Unable to work	10 (8.3%)
General health rating	
Good to excellent	93 (76.9)
Fair to poor	28 (23.1)
Screened condition(s) ^b	
Pain	106 (87.6)
Mobility difficulty	25 (21.0)
Depression	13 (10.7)
Frequency of accessing Internet for medical information	
Very often	9 (7.4%)
Often	14 (11.6%)
Sometimes	40 (33.1%)
Seldom	48 (39.7%)
Not at all	10 (8.3%)

Note. ^aNumbers do not total 121 due to missing information. ^bConditions are not mutually exclusive.

“annual physical... usually he doesn't like to mix 'apples and oranges'—meaning the annual stuff with the current medical questions.” Another

patient referred to her upcoming visit as “basically a complete physical but mentioning all these problems at it.” Patients sent positive feedback about

their use of the Web site and communication tools. One patient reported, "I am a physician myself. The coaching information online was very interesting. It reminded me of a specific thing to do during my visit next week...." Another stated, "Thanks for the tips.... Have contacted my doc via PatientSite and indicated what my primary specific goal is and he will discuss this with me at my physical this coming week." Another participant wrote, "I welcomed reading the material on the e-Health site...." Only one participant reported any difficulty understanding or using the education materials.

Discussion

Internet-based coaching is a vastly different application of nursing science than the usual bedside or face-to-face care. However, that does not diminish its potential to offer considerable benefits to patients. An activated and engaged patient is more likely to manage chronic conditions effectively, and the manner for mobilizing patients in their care is less important than reaching that goal. Self-management consists of educating and motivating patients on two different levels: (a) getting necessary information to patients for them to work effectively with clinicians in managing chronic conditions and (b) motivating or activating patients to assume management of their own healthcare and daily decision making regarding their chronic conditions. Ensuring that patients have the appropriate tools to accomplish this requires patient education, coaching, and support.

Patient education is central to nursing care. The crucial elements of effective education of adults include providing a comfortable learning environment, assessment of patient's needs and learning style, and presentation of appropriate learning materials (Boyd, Graham, Gleit, & Whitman, 1997; Lorig, 2001). In addition, the nurse assesses the patient's response to teaching and makes appropriate adjustments. Using an electronic medium may hinder easy assessment of patients' learning. The inability to confirm that the Internet-based intervention is received and understood by a patient restricts the opportunity to clarify content or individualize messages to

patients. In this study, the e-coach intervention was designed to occur within 4 weeks, precluding the development of an ongoing relationship between the nurse e-coach and the patient and limiting the amount of coaching that could be conducted. By using e-mail and the study's informational Web site, it was not possible to control or confirm whether participants actually read the intervention materials or completed the worksheets.

This intervention represents one possible component of a broader program for managing chronic conditions through an Internet or electronic means. Empowering patients to be more active partners with their providers in managing their chronic conditions is an important step in becoming self-managers. Clinicians, in turn, need to be willing to work collaboratively with patients over the long-term. Often, lifestyle and health behavior factors are addressed inadequately in brief office encounters. Current barriers to effective self-management programs in daily practice include limited resources and support for such programming and lack of time during office visits (Lorig & Holman, 2003). Moving this portion of care out of the office visit and utilizing the time management benefits of electronic communication may offer enhanced self-management support. Results of the randomized controlled trial in which the intervention was tested will be reported in a separate article. ▽

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Corresponding author: Suzanne G. Leveille, PhD, RN, Division of General Medicine and Primary Care, Beth Israel Deaconess Medical Center, 1309 Beacon St., Rm. 219, Brookline, MA 02446 (e-mail: sleveill@bidmc.harvard.edu).

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