

People's health status depends, in large part, on whether they can understand and remember the health information they receive. Current communication strategies are failing in this regard. Most people forget what their providers tell them,¹ and others remember the information incorrectly.² It is unrealistic to expect patients will significantly improve their reading, mathematic, or health literacy skills in the context of a medical visit. Therefore, more needs to be done to improve the ability of health care providers, including practitioners, insurers, health educators, health administrators, pharmaceutical manufacturers, and others, to convey complex health information to low health literate populations. It also is important to use different methods for reaching patients. Because there are many different learning styles (eg, visual, auditory, and kinesthetic), it is critical to use both verbal and written communication tools. The Task Force recommended health care providers strive to improve their health communications with all patients, regardless of their literacy level. More effective communication strategies developed to better serve low health literate populations will also benefit more literate populations. This chapter reviews communication strategies that have been designed and/or proven to improve health literacy across a variety of populations.

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Improving Verbal and Written Communication

People receive health information from a variety of sources, the most frequent of which are verbal and written messages. Thus, health care providers should incorporate more effective communication strategies into both types of communication.

Verbal Communication

Research indicates low health literate patients face difficulties understanding information communicated orally during the provider-patient encounter, in addition to problems they may have understanding written communications.³ In fact, studies indicate patients only understand and retain about half of what a provider tells them.⁴ Patients often do not feel comfortable asking providers to clarify or repeat information. Research has shown personal interactions between providers and patients impact patient satisfaction, patient self-care, and health outcomes.³ Therefore, verbal communication during a provider-patient encounter is extremely important, particularly for low health literate patients who may lack the resources and skills necessary to obtain needed health information on their own.⁴

Low health literate populations, along with many individuals with higher literacy skills, often have difficulty understanding complex medical or technical terminology. For example, one study of low health literate patients being screened for colorectal cancer found patients were unfamiliar with the words polyp, tumor, growth, lesion, and blood in the stool, which were commonly used during provider-patient encounters.⁵ Providers should avoid using jargon and complicated medical terminology. When it is necessary to use a clinical word in practice, providers should make an effort to use plain language to explain that word. Low health

literate patients also are more likely to struggle when technical information is conveyed at a rapid pace.³ Providers should be conscientious of the speed at which they talk and should emphasize the key messages they want their patients to remember. Providers should use visual materials to reinforce their messages and should limit the amount of advice given to patients.⁶

Improved provider-patient communication will benefit all patients, but particularly low health literate patients. One of the most effective methods to improve information retention and understanding is the “teach-back” technique. Providers using the teach-back method ask their patients to repeat information they just heard in their own words. One study found retention of information among patients asked to restate information was 83.5% compared to 60.8% for patients not asked to restate information.⁷ In addition to improving information retention for a patient, the teach-back technique also lets the provider know whether the patient understood the information. This technique gives the provider an opportunity to correct any misunderstandings and reiterate critical information that was forgotten.

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Teach-back can play a particularly important role when a patient is faced with a complex procedure. In such cases, the teach-back technique can complement written information. For example, patients who are undergoing complex procedures are required to sign an informed consent form. Informed consent forms are meant to ensure patients understand and accept the potential risks and consequences of their treatment. These forms are legal documents and are often written at the college reading level. As such, they are not understandable to a large portion of the population. At the University of Virginia Medical Center, it became clear many patients were canceling or delaying surgeries because they did not understand the information they were being told prior to their operations.⁸ The Medical Center introduced the use of the teach-back technique in conjunction with informed consent forms to address this problem. This new informed consent “process” evaluates patients’ understanding of their upcoming procedures at three points: in the surgical clinic, in the Preanesthesia Evaluation and Testing Center, and on the day of surgery. At each of those points, patients are asked what procedure they are expecting to have. In addition, patients are asked to explain their food restrictions prior to surgery and the risks that may occur during the surgery. Furthermore, patients are sent home with simplified versions of informed consent documents, which include a phone number to call if patients have any questions about their procedures.

The methods mentioned above focus on improving provider communication with patients. However, there also are initiatives that encourage consumers to take a more active role in learning about their health problems. One example is AskMe,³ a campaign developed by the Partnership for Clear Health Communication.⁹ The campaign encourages patients to ask their provider three questions during a health visit:

- What is my main problem?
- What should I do about this problem?
- Why is this important to me?

The campaign strives to inform consumers of the importance of being able to answer those three questions before they leave their providers' offices. Consumers need to understand their main health problem and what they can do about it. It also is important for consumers to understand why they need to address their health care problem. It is not always self-evident why an individual with hypertension needs to control his or her salt intake or why a diabetic has to monitor his or her glucose level. Explaining why the action steps are necessary is critical to enhancing patient motivation and compliance. If consumers know they need to understand certain health information before they leave their providers' offices, they can reduce the confusion and miscommunication that currently exists. The best time to clarify any concerns is when patients are still in providers' offices, when there are health care professionals available to answer outstanding questions.

Another relatively new communication strategy is the group medical visit. Group medical visits were developed to respond to a number of growing concerns, including the time constraints of managed care, the increasing number of individuals with chronic diseases, the increasing number of elderly individuals, and the need to include family members in disease management.^{10,11} Group medical visits also may be helpful to low literacy populations. Group medical visits allow providers to communicate with a greater number of patients with similar health concerns at one time and in a more comprehensive way. The visits are generally conducted by a team of medical professionals, including a nurse, physician, and other health care professionals. Group medical visits foster group discussion and information sharing. In a group setting, patients may get answers to questions they did not think of themselves or were too embarrassed to ask. Group visits have been found to reduce emergency department visits among older adults with chronic illnesses.¹² Furthermore, initial results of a project to improve the self-management skills of low health literate patients with diabetes found group medical visits increased patient engagement in care and clinical activity.¹³ These studies suggest group medical visits may be a promising practice for serving low literacy patients with complex health concerns.

Communication of health information also can be improved through the use of community health workers (also known as lay health advisors, promotora de salud, or community outreach workers) or trained health educators. Community health workers are able to reach underserved populations,¹⁴⁻¹⁷ and they attempt to make health information meaningful and culturally relevant to their patients.¹⁸⁻²⁰ Community health workers use their social networks to engage and empower patients to get involved in their own health care.²¹ Studies indicate community health workers are a cost effective way²¹ to improve patients' access to care, health knowledge, and health-related behaviors.^{15,16,22-25} Trained health educators are paraprofessionals specifically trained to work with patients to increase their knowledge about health promotion or specific chronic diseases and to improve overall health or manage chronic conditions.

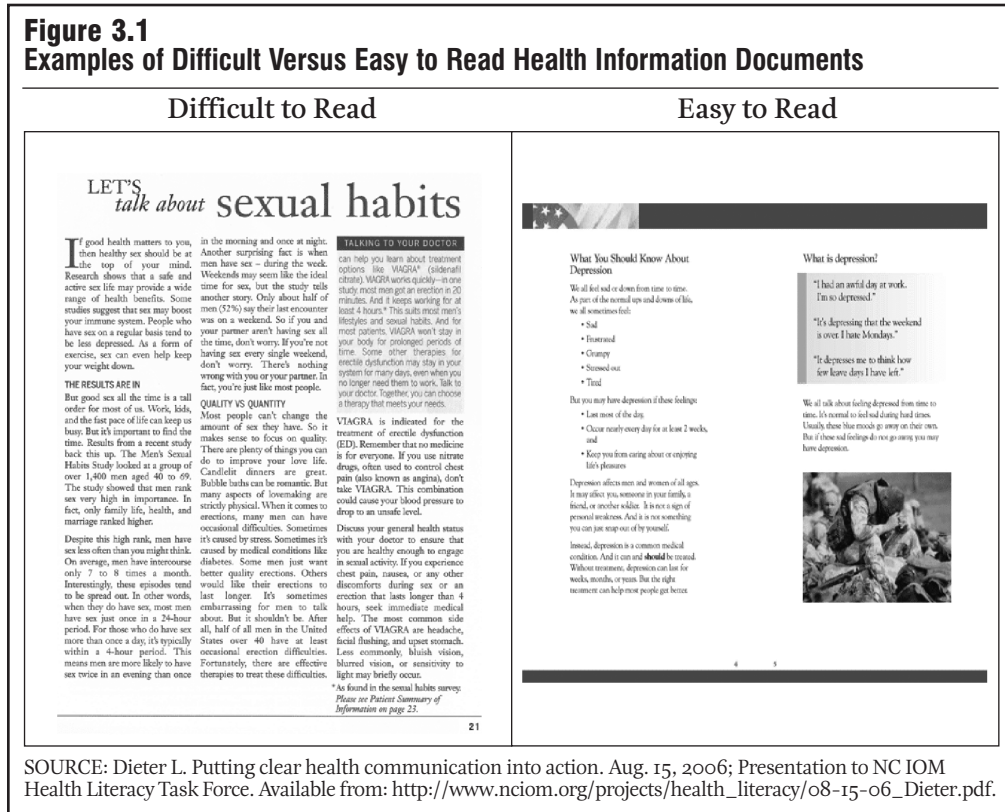
Written Information

There are thousands of different consumer health education documents aimed at providing information about health promotion, specific health conditions, self-management techniques, treatment guidelines, the health care system, and

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insurance coverage. Too often, these materials are difficult to understand. They are often written at the college level, in small print, with a lot of complex medical terminology. The images below provide an example of a consumer education document that is difficult for many people to understand, versus one that is more inviting and understandable to the reader.²⁶ (See Figure 3.1.)

Documents that effectively communicate information must be understandable to the populations they are meant to reach.



Adult literacy experts have created guidelines to ensure health information is understandable to a wide audience. Documents that effectively communicate information must first and foremost be understandable to the populations they are meant to reach. Therefore, they must be written at an appropriate reading level. Across the country, almost half of the population reads at or below an eighth grade reading level.²⁷ People with low health literacy often have lower reading abilities. Therefore, the NC IOM Health Literacy Task Force suggested all documents developed by North Carolina state and local agencies, health care providers, and insurers be written at an appropriate level for the targeted audience.

Besides using less complex syntax, it also is important to use plain language in written documents. Plain language means using common words and the active voice. It is written like a conversation and has short sentences. Plain language documents often include a glossary that explains more complicated words that must be included in medical or health information. Another important component of effective written communication is ensuring a document has sufficient white space and margins. Less dense language on a page is more inviting to the eye and less intimidating to the reader. Documents also should use clear and descriptive headings and include pictures and diagrams that help illustrate or explain the written text.

Studies have shown the use of pictures in health information improves consumer comprehension, recall, and adherence.²⁸ Pictures should be concrete rather than complex. Unnecessary details should be removed from pictures to avoid distraction. Also, pictures should be closely linked to the text or captions that explain them. Both health professionals and consumers should be involved in the design of materials. For example, health professionals should be involved in selecting pictures to ensure accuracy, whereas consumers are needed to ensure materials are understandable.²⁸

Adult literacy experts have created guidelines to ensure health information is understandable to a wide audience. These guidelines, adapted from the Center for Health Studies Readability Toolkit,²⁹ include:

- 1) write information at an appropriate reading level
- 2) replace complicated medical or technical words with plain language (when appropriate)^a
- 3) use short sentences and short paragraphs
- 4) write using the active voice
- 5) use clear and descriptive headings
- 6) use adequate white space and margins
- 7) use pictures and diagrams that clarify written concepts
- 8) focus materials on desired behaviors rather than on medical facts
- 9) make information culturally sensitive and motivate consumers to take action

Pfizer Global Pharmaceuticals, one of the forerunners in the development of plain language medical and health documents, uses similar guidelines in the development of their health education materials. Pfizer developed the Principles for Clear Communication, which serves as a guideline for developing documents that communicate motivating, useful, and understandable information about medical conditions and treatment options.^b Pfizer also developed an internal review

Basic strategies such as using plain language, targeting written materials to an appropriate reading level, and using pictures in health information improves consumer understanding.

a It is sometimes necessary to include certain medical terminology in documents, even if the words are above the targeted reading level. For example, it is important the consumer know the word for their underlying medical condition (such as “diabetes”). However, the document also should include definitions of medical or technical words that are used.

b The Principles for Clear Communication include five elements:

- 1 *Explain the purpose of the document* – Consider the purpose and benefits from the patient’s viewpoint, limit content to only what is necessary to know, plan the sequence of topics, and review key points.
- 2 *Involve the reader* – Create interaction with the reader, emphasize desired patient actions and behaviors, spell out realistic action steps, make it culturally/age/gender appropriate.
- 3 *Make the document easy to read* – Use active voice and common words, provide examples for difficult words and concepts, put context first, break up complex topics, present each topic in an uninterrupted layout, do not use vertical text, use road signs and chunking, keep paragraphs short and focused on a single topic, avoid long and complex sentences.
- 4 *Make the document look easy to read* – Avoid reverse type/all caps/italics, use sharp contrast and large font type, include a lot of white space and no dense text, use cueing to direct attention to key points.
- 5 *Select visuals that clarify the document or motivate the reader* – Select realistic visuals, omit distracting details, use graphics that contribute to the message, use action captions, and explain lists and charts with examples.

process to ensure documents meet the Principles prior to being distributed to consumers. This accountability is integral to the implementation of effective communication principles in all Pfizer documents. Chapter 4 discusses how this same process can be used to guide the development of documents in North Carolina.

Websites

Websites are one of the newest and most popular mediums for distributing health information to consumers. Over time, more consumers have started to use the Internet to access health information. Searching for medical information is the eleventh most popular activity done on the Internet.³⁰ Websites offer several advantages over traditional written materials. For example, information on websites can be updated by the producer at any time. Additionally, if consumers do not find the information they are seeking from one website, they can access other websites to gather the information. However, this dynamic nature also can be problematic. In many cases, the accuracy and comprehensive nature of the information can vary dramatically across websites. Furthermore, there is no systematic program for evaluating websites.

A study of health information on websites found websites with health information generally provided about half the information experts felt was critical to specific health topics.³¹ Furthermore, locating information using search engines is not very reliable. The study found only 34% of the links found on the first page of search results were relevant to the health topic researched. Problems continue even when a consumer finds a relevant website with useful information. Berland et al. found the average reading level of English-language websites to be at the college reading level. None were found to be lower than the tenth grade reading level. Therefore, it is critical health-related websites follow similar guidelines to the ones recommended for printed written materials. Websites should use plain language, large white space, and bulleted lists. In addition, websites should be written at appropriate reading levels.

However, websites should follow slightly different guidelines with respect to visuals, such as pictures and graphics. Website consumers use computers, browsers, and Internet connections with varying capabilities. Therefore, some consumers cannot view graphics or video as clearly as others. As a result, a small amount of text should be used to describe visuals on a website in case some users cannot or have chosen not to load images.³²

Information on websites should be presented in a well-organized way, and the number of distractions, such as background patterns and links on the page, should be limited. Furthermore, information telling the consumer who, what, where, when, why, and how should be visible without scrolling down the page.³² Websites should undergo usability testing that demonstrates the consumer can find needed information without difficulty.

Other Media

Health information also can be shared using other media, such as videotapes, DVDs, audiotapes, and CDs. These forms of communication are generally more easily

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understood by people of varying literacy levels. They can be used to communicate health information at many different points in the health care delivery system. An added benefit of using these media is the opportunity to include emotional as well as educational content, which can be beneficial when dealing with sensitive or embarrassing health topics.³²

Osborne makes several recommendations for improving the understandability of health information delivered through videotapes, DVDs, audiotapes, and CDs.³² Personal stories are more effective in these media than presentations of complex data and information. Also, the key messages should be limited (generally to no more than five key points), which should each be emphasized at the beginning, middle, and end of the presentation. The tone of the message should engage the audience without being too emotional and the content of the messages should be culturally appropriate for the expected audience(s). The sound and visual quality of the media is also important. Because Osborne's recommendations have not been studied to determine their effectiveness, it is unclear which techniques will produce the greatest improvement in understanding.

Evidence-Based Models and Promising Practices

Health care practitioners and health services researchers have tested many different types of interventions to improve consumer understanding of health information, change health behaviors, and improve health outcomes. However, only a limited number of these interventions have been studied to determine their efficacy, especially among people with low health literacy. Ideally studies would compare a group of people who receive the intervention (intervention group) to another group who does not receive the intervention (control group). In addition, studies should include individuals of all literacy levels and stratify the interventions by literacy level. This methodology would help identify successful interventions for people with different literacy levels. Successful interventions should improve outcomes in both low and high literacy individuals and narrow the disparities between low and high literacy groups.⁶ A review by DeWalt and Pignone found only 20 systematic studies of health and literacy used previously validated instruments to measure the literacy of study participants.³³ Of those studies, few examined whether the intervention was specifically effective in the low literacy population or whether the intervention reduced the disparities in outcomes from literacy differences.

In DeWalt and Pignone's review, more than half (12) of the studies evaluated the impact of interventions on knowledge and comprehension of health materials. The studies had mixed results regarding the impact of interventions on low literate populations. For example, one study found no difference in knowledge from a brochure written at the twelfth grade level compared to a videotape education tool with language at a similar grade level.³⁴ In contrast, a study found reading materials and a video presented at fifth to sixth grade reading levels increased knowledge compared to a control intervention.³⁵ Written materials using illustrations can be more effective in imparting knowledge among lower literate individuals than materials with only text.³³

Some of the studies in the review evaluated the impact of interventions on health behaviors. For example, one study demonstrated improvements in self-care

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among patients with educational materials that used photographs, as compared to illustrations. In another study, the introduction of verbal teaching improved medication compliance among older adults, but the use of a color-coded medication schedule did not. An interactive video was found to improve self-care among populations of varying literacy levels.^{33,36} In contrast, interventions with low health literate patients focused on dietary behaviors produced small changes, if any, in health behaviors.³³

Overall, most of the studies on health and literacy indicate interventions aimed at making health care materials easier to understand improve knowledge in populations with low literacy. However, most of these studies did not focus on the impact of these interventions on health outcomes.

Health care interventions aimed at people with low health literacy can have a positive effect on health outcomes.

More recent studies have demonstrated health care interventions aimed at people with low health literacy can have a positive effect on health outcomes. Some of the leading national studies have been conducted at the University of North Carolina at Chapel Hill (UNC-CH). These studies have found disease management programs coupled with educational materials and interventions aimed at people with low health literacy can be very helpful for low literate populations. DeWalt et al. found teaching self-management for heart failure can be effective if the intervention is limited in scope, making it more manageable for the patient.³⁷ This study used an intervention that included a one-hour individualized education session, an education booklet written below the sixth grade reading level, a digital bathroom scale, scheduled follow-up phone calls, and facilitated access. The intervention reduced the guideline list of information for heart failure patients from 21 topics to six. This program increased patient knowledge about heart failure, self-efficacy, and self-care behavior. Furthermore, it reduced hospital admission rates and the overall death incidence rate among the population receiving the intervention. Notably, the intervention had a greater impact on decreasing hospitalization or death among patients with lower literacy skills.

Another example of an effective intervention is the planned diabetes care program at the University of North Carolina general internal medicine practice.³⁸ This pharmacist-led program was integrated into the primary care setting. It incorporated the use of a database, patient education, care coordination, phone follow-up, and treatment and monitoring algorithms. The goal was to improve the glucose control of the patient population. A study of the program found improved glucose levels among both the control and intervention groups, but the intervention group's improvement was greater. Notably, within the intervention group, lower health literate patients demonstrated greater improvement in their glucose levels than higher health literate patients. The study found easy-to-read materials were necessary but not sufficient for improving glucose control. It was necessary to involve the patient actively in self-care. Frequent reinforcement and encouragement also was necessary to improve health outcomes.⁶

Health care providers are beginning to understand the connection between health literacy and health outcomes. As noted above, several studies have demonstrated a correlation between health literacy and appropriate use of health services, knowledge of health issues, understanding of health care advice and treatment regimens, and

better health outcomes. We have a growing but limited understanding of how to intervene effectively to address these problems.³⁶ More research is needed to identify effective communication and support strategies to address the problems faced by individuals with low health literacy.

North Carolina is well poised to assume a national leadership role in this area. Interdisciplinary researchers in the School of Medicine, School of Public Health, School of Nursing, and School of Pharmacy at UNC-CH are involved in some of the leading research in this area, including the congestive heart failure and diabetes studies mentioned previously. Two North Carolina researchers have received prestigious Pfizer National Fellowships or Grants in Clear Health Communications. Several researchers at UNC-CH as well as one at Duke University have received National Institutes of Medicine or Agency for Healthcare Research and Quality funding for work examining the role of health literacy in health outcomes and to develop and test interventions to mitigate the effects of low health literacy.^c North Carolina adult literacy educators also have developed innovative curricula incorporating health literacy training into their literacy courses. (See Chapter 5.)

North Carolina should develop a Health Literacy Center of Excellence that will assume a leadership role in coordinating and disseminating health literacy information across the state. The Center would review existing and emerging research to identify evidence-based methods of communicating health information to individuals with low health literacy. The Center would disseminate this information to North Carolina health care systems, health care practitioners, publicly-funded programs, and private insurers and payers. Furthermore, the Center would work collaboratively with the academic health centers, health professions training schools, North Carolina Area Health Education Centers (AHEC) Program, and health professional associations to educate health professionals about strategies to improve communication skills with individuals of all literacy levels. The Center also would help identify health education materials that have been tested for use with individuals who have low literacy skills. Health education materials that are effective with patients of different literacy skill levels should be available to practitioners throughout the state. The Center would be guided by an Advisory Committee that includes adult literacy experts, publicly funded agencies, collaborating institutions, health professions training schools and associations, private insurers, and consumers. Not only will this group help steer the work of the Center, but it also can be a vehicle for more broad-based dissemination of successful strategies.

Recommendation 3.1

Foundations at state and national levels should develop a competitive process to create a North Carolina Health Literacy Center of Excellence. The Center would work collaboratively with other organizations to

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c In addition, Duke University was selected to participate in the National Institute of Health's Clinical and Translational Science Award (CTSA) consortium, and UNC-CH and Wake Forest University Health Sciences received planning awards to help them prepare their CTSA applications. The CTSA consortium is a new consortium of academic health centers charged with translating interdisciplinary health science research into information and treatments that can be used by practitioners and patients in the community.³⁹ Although the consortium is not focused on health literacy, these universities can apply the skills they use in translating bench science or health services research into more readily accessible information to other areas of health information.

educate health professionals, identify evidence-based guidelines or best practices of health communication, collect and disseminate appropriate health education materials, and otherwise work to address problems of low health literacy throughout the state.

- a) The Center should help increase the capacity of health care professionals to communicate more effectively and otherwise address the problems faced by people with low health literacy. Specifically, the Center should work in conjunction with other appropriate organizations to:
 - i) review existing and emerging research to identify evidence-based methods of communicating health information and serving people with low health literacy;
 - ii) disseminate evidence-based models of health care communication and services for people with low health literacy;
 - iii) develop undergraduate, graduate, and continuing education curricula that teach health professionals about the problems of health literacy and evidence-based guidelines or best practices for people with low health literacy; and
 - iv) develop expertise in designing health education materials appropriate for people with low health literacy and work with other organizations on “train the trainer” events to help disseminate these skills to state and local agencies, health care providers, and other organizations.
- b) The Center should help increase the capacity of adult literacy professionals to address problems of low health literacy. Specifically, the Center should work with adult literacy experts to:
 - i) identify best practices in improving health literacy skills and
 - ii) develop a health literacy toolkit designed to build literacy and self advocacy skills for use in adult education settings.
- c) The Center should identify, collect, and disseminate examples of effective written and nonwritten health information designed to educate consumers with low health literacy about different health conditions and about how to manage health problems. The Center should identify, collect, and disseminate practical tools for providers to evaluate current materials and should provide links to examples of effective health information. These materials and tools should be made available throughout the state to public and private agencies, organizations, and providers through the Area Health Education Centers (AHEC) Program Digital Library and NC Health Info. The Center should develop a process to evaluate or obtain feedback on the usefulness of the materials and tools in providing and evaluating health information.

- d) The Center should evaluate the effectiveness of its dissemination and educational efforts to ensure the Center's collaborative activities are helping improve communication and health services provided to people with low health literacy.
- (e) The Center shall have an Advisory Committee that includes, but is not limited to, representatives of adult literacy programs and local literacy councils, academic medical schools and other health professions schools, AHEC, North Carolina Department of Health and Human Services divisions and agencies, North Carolina Community College System, health professional associations, health care providers, safety net providers, Community Care of North Carolina, North Carolina State Health Plan, private insurers, and consumers with low health literacy.

The Health Literacy Center of Excellence can help identify evidence-based and promising practices to better serve patient populations, particularly those with low literacy. These practices have the potential to improve health care quality and outcomes. However, a system is needed to teach providers new communication skills, disseminate best practices, and ensure they are incorporated into practice. Chapter 4 provides guidelines for integrating health literacy into practices and institutions.

References

1. Kessels RP. Patients' memory for medical information. *J R Soc Med.* 2003;96:219-222.
2. Anderson JL, Dodman S, Kopelman M, Fleming A. Patient information recall in a rheumatology clinic. *Rheumatol Rehabil.* 1979;18:18-22.
3. Schillinger D, Bindman A, Wang F, Stewart A, Piette J. Functional health literacy and the quality of physician-patient communication among diabetes patients. *Patient Educ Couns.* 2004;52:315-323.
4. Schillinger D, Piette J, Grumbach K, et al. Closing the loop: Physician communication with diabetic patients who have low health literacy. *Arch Intern Med.* 2003;163:83-90.
5. Davis TC, Wolf MS, Bass PF, et al. Low literacy impairs comprehension of prescription drug warning labels. *J Gen Intern Med.* 2006;21:847-851.
6. DeWalt D. Overview of the literature: What are effective interventions with people with low health literacy. Sept. 19, 2006; Presentation to NC IOM Health Literacy Task Force.
7. Bertakis KD. The communication of information from physician to patient: A method for increasing patient retention and satisfaction. *J Fam Pract.* 1977;5:217-222.
8. Flowers L. Teach-back improves informed consent. *OR Manager.* 2006;22:25-26.
9. Partnership for Clear Health Communication. Ask Me 3. Available at: <http://www.askme3.org/>. Accessed Mar. 21, 2007.
10. Jaber R, Braksmajer A, Trilling JS. Group visits: A qualitative review of current research. *J Am Board Fam Med.* 2006;19:276-290.
11. Jaber R, Braksmajer A, Trilling J. Group visits for chronic illness care: Models, benefits and challenges. *Fam Pract Manag.* 2006;13:37-40.
12. Coleman EA, Eilertsen TB, Kramer AM, Magid DJ, Beck A, Conner D. Reducing emergency visits in older adults with chronic illness. A randomized, controlled trial of group visits. *Eff Clin Pract.* 2001;4:49-57.
13. Clancy DE, Cope DW, Magruder KM, Huang P, Salter KH, Fields AW. Evaluating group visits in an uninsured or inadequately insured patient population with uncontrolled type 2 diabetes. *Diabetes Educ.* 2003;29:292-302.
14. Dower C, Knox M, Lindler V, O'Neil E. *Advancing Community Health Worker Practice and Utilization: The Focus on Financing.* San Francisco, CA: National Fund for Medical Education; 2006.
15. Elder JP, Ayala GX, Campbell NR, et al. Long-term effects of a communication intervention for Spanish-dominant Latinas. *Am J Prev Med.* 2006;31:159-166.
16. Sherrill WW, Crew L, Mayo RM, Mayo WF, Rogers BL, Haynes DF. Educational and health services innovation to improve care for rural Hispanic communities in the US. *Educ Health (Abingdon).* 2005;18:356-367.
17. Warrick LH, Wood AH, Meister JS, de Zapien JG. Evaluation of a peer health worker prenatal outreach and education program for Hispanic farmworker families. *J Community Health.* 1992;17:13-26.
18. Balcazar H, Alvarado M, Hollen ML, et al. Salud para su corazon-NCLR: A comprehensive promotora outreach program to promote heart-healthy behaviors among Hispanics. *Health Promot Pract.* 2006;7:68-77.
19. Moore A, Earp JAL. The long reach to basic healthcare services: Partnering with lay health advisors to improve health equity. In: Earp JAL, French EA, Gilkey MB, eds. *Patient Advocacy for Healthcare Quality: Strategies for Achieving Patient-Centered Care.* 2008.
20. Ramos IN, May M, Ramos KS. Environmental health training of promotoras in colonias along the Texas-Mexico border. *Am J Public Health.* 2001;91:568-570.
21. Lam TK, McPhee SJ, Mock J, et al. Encouraging Vietnamese-American women to obtain pap tests through lay health worker outreach and media education. *J Gen Intern Med.* 2003;18:516-524.
22. Birkel RC, Golaszewski T, Koman JJ, Singh BK, Catan V, Souply K. Findings from the horizontes acquired immune deficiency syndrome education project: The impact of indigenous outreach workers as change agents for injection drug users. *Health Educ Q.* 1993;20:523-538.
23. Corkery E, Palmer C, Foley ME, Schechter CB, Frisher L, Roman SH. Effect of a bicultural community health worker on completion of diabetes education in a Hispanic population. *Diabetes Care.* 1997;20:254-257.

24. Kim S, Koniak-Griffin D, Flaskerud JH, Guarnero PA. The impact of lay health advisors on cardiovascular health promotion: Using a community-based participatory approach. *J Cardiovasc Nurs*. 2004;19:192-199.
25. Whitley EM, Everhart RM, Wright RA. Measuring return on investment of outreach by community health workers. *J Health Care Poor Underserved*. 2006;17:6-15.
26. Dieter L. Putting clear health communication into action. Aug. 15, 2006; Presentation to NC IOM Health Literacy Task Force. Available from: http://www.nciom.org/projects/health_literacy/o8-15-06_Dieter.pdf.
27. Kirsch I, Jungeblut A, Jenkins L, Kolstad A. *Adult Literacy in America: A First Look at the Findings of the National Adult Literacy Survey*. Washington, DC: National Center for Education Statistics, US Department of Education; 1993.
28. Houts PS, Doak CC, Doak LG, Loscalzo MJ. The role of pictures in improving health communication: A review of research on attention, comprehension, recall, and adherence. *Patient Educ Couns*. 2006;61:173-190.
29. Ridpath JG. *The Center for Health Studies Readability Toolkit*. 2nd ed. Seattle, WA: Group Health Center for Health Studies; 2006.
30. Pew Internet and American Life Project. Internet activities. Available at: http://www.pewinternet.org/trends/Internet_Activities_4.23.04.htm. Accessed Feb. 20, 2007.
31. Berland GK, Elliott MN, Morales LS, et al. Health information on the internet: Accessibility, quality, and readability in English and Spanish. *JAMA*. 2001;285:2612-2621.
32. Osborne H. *Health Literacy from A to Z: Practical Ways to Communicate Your Health Message*. Boston, MA: Jones and Barlett Publishers; 2005.
33. Pignone M, DeWalt DA, Sheridan S, Berkman N, Lohr KN. Interventions to improve health outcomes for patients with low literacy. A systematic review. *J Gen Intern Med*. 2005;20:185-192.
34. Murphy PW, Chesson AL, Walker L, Arnold CL, Chesson LM. Comparing the effectiveness of video and written material for improving knowledge among sleep disorders clinic patients with limited literacy skills. *South Med J*. 2000;93:297-304.
35. Meade CD, McKinney WP, Barnas GP. Educating patients with limited literacy skills: The effectiveness of printed and videotaped materials about colon cancer. *Am J Public Health*. 1994;84:119-121.
36. Berkman ND, DeWalt DA, Pignone MP, et al. Literacy and health outcomes. *Evid Rep Technol Assess (Summ)*. 2004;(87):1-8.
37. DeWalt DA, Pignone M, Malone R, et al. Development and pilot testing of a disease management program for low literacy patients with heart failure. *Patient Educ Couns*. 2004;55:78-86.
38. Rothman RL, Malone R, Bryant B, et al. A randomized trial of a primary care-based disease management program to improve cardiovascular risk factors and glycated hemoglobin levels in patients with diabetes. *Am J Med*. 2005;118:276-284.
39. Clinical and Translational Science Awards. Available at: <http://ctsaweb.org/>. Accessed Feb. 20, 2007.

