Interventions to Improve Care for Patients with Limited Health Literacy

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Abstract

Objective—To propose a framework and describe best practices for improving care for patients with limited health literacy (LHL).

Methods—Review of the literature.

Results—Approximately half of the U.S. adult population has LHL. Because LHL is associated with poor health outcomes and contributes to health disparities, the adoption of evidence-based best practices is imperative. Feasible interventions at the clinician-patient level (eg, patient-centered communication, clear communication techniques, teach-to-goal methods, and reinforcement), at the system-patient level (eg, clear health education materials, visual aids, clear medication labeling, self-management support programs, and shame-free clinical environments), and at the community-patient level (eg, adult education referrals, lay health educators, and harnessing the mass media) can improve health outcomes for patients with LHL.

Conclusion—Because LHL is prevalent, and because the recommended communication strategies can benefit patients of all literacy levels, clinicians, health system planners, and health policy leaders should promote the uptake of these strategies into routine care.

It is estimated that close to half of the U.S. population has limited health literacy (LHL) [1,2], defined by the Institute of Medicine as a limited capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions [3]. LHL is not a fixed individual characteristic but is a function of the demands and expectations placed on the patient by the health care system as well as the nature of patient's disease processes [4].

Patients with LHL are more likely to have poor health status [5–9], higher rates of hospitalization [5,10], and a nearly twofold higher mortality rate [11,12]. They are also more likely to experience disparities in health and health care access [6], have lower rates of screening and preventive services, and obtain their care in the emergency department [6,13, 14]. Furthermore, patients with LHL are more likely to have poorer knowledge about their disease processes [5], medication regimens [5,15–18], and methods for managing their disease [19–22]. LHL also has a negative affect on doctor-patient communication. Patients with LHL more often use a passive communication style with their physician, do not engage in shared decision making, and report that interactions with their physician were not helpful or

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Author contributions: conception and design, RLS, DS; analysis and interpretation of data, RLS; drafting of article, RLS, DS; critical revision of the article, RLS, DS; provision of study materials or patients, RLS; obtaining of funding, DS; administrative or technical support, RLS, DS; collection and assembly of data, RLS.

Financial disclosures: None.

empowering [23–26]. The additional health care expenditures associated with LHL is estimated at $50 to $73 billion annually [27]. Therefore, improving health care quality and safety for patients with LHL is a major goal of the World Health Organization, Healthy People 2010, and the Joint Commission [28–30].

Research on health literacy interventions is in its infancy, and there is little evidence showing improvement of long-term outcomes. Many studies of interventional modalities are limited by a lack of stratification by literacy level, lack of a randomized or blinded design, and use of multiple interventions, making it difficult to identify the component that was most helpful [31]. However, good evidence does exist for employing a number of clear health communication techniques to improve the care of patients with LHL. Because effective communication can benefit patients of all literacy levels, most experts do not recommend screening for LHL but rather using evidence-based health communication techniques for all patients [32]. In this paper, we present intervention approaches that have shown benefit at the clinician-patient, system-patient, and community-patient level.

Clinician-Patient Level Interventions

Common mistakes that clinicians make in communication include overwhelming the patient with too much information, using jargon and technical terminology, relying on words alone, and failing to assess patient understanding [24,33–35]. Employing effective communication techniques may be one of the most important interventions to reduce health disparities related to LHL. The basic principles of effective clinician-patient communication have been developed within the education and adult education fields [36–41] and have been adopted by the health literacy scientific community [42–45]. Recommendations include employing patient-centered communication, clear health communication techniques, confirmation of understanding, and reinforcement (Table).

Patient-Centered Communication

It is important to tailor communication to the individual patient. Kripalani and Weiss [43] and others recommend first asking patients what they already know ("What do you already know or believe about….?"). This allows the clinician to tailor their message, uncover knowledge deficits or health beliefs, and may save time. In addition, since patients only remember a few things from any encounter, it is critical to address patients' main concern, which often is: "What do I need to *do*?" rather than "What do I need to *know*?"[46]. Assessing patients' perceived barriers to carrying out a recommendation is also imperative to tailoring advice [47].

Clear Health Communication

Patients with LHL often rely solely on verbal instructions; therefore, verbal communication must be clear [44]. It is recommended that clinicians slow down their speech, use plain or what is often called "living-room language," and avoid jargon. For example say "not cancer" instead of "benign." Because successful communication requires that patients draw from a common vocabulary and experience [33,37,38], attempting to match the clinician's vocabulary with that of the patient has been shown to be helpful [33,48]. Clinicians should also attempt to prioritize and limit the number of key points discussed to 3 or less [42].

Confirmation of Understanding

Confirming understanding is one of the most important components of good communication. However, simply asking "Do you have any questions?" or "Do you understand?" is an ineffective means of eliciting patient understanding and should be avoided. Instead, asking "What questions do you have?" conveys to the patient that they should have questions and empowers them to get their questions answered [43]. After patients' questions have been

answered, the "teach back," "teach-to-goal," or sometimes called the "show me" method should be routinely used to confirm patients' understanding, as this approach has the best evidence for improving health outcomes. The teach back method is a technique in which the clinician asks patients to restate or demonstrate the knowledge or technique just taught. Kripalani and Weiss [43] state:

> I always ask my patients to repeat things back to me to make sure I have explained them clearly. 'I'd like you to tell me (show me) how you are going to take the new medicine (use the new asthma inhaler) that we talked about today.'

Schillinger et al [34] recommend destigmatizing the interaction by placing the onus of clear communication on the clinician by saying: "I've just said a lot of things. To make sure I did a good job and explained things clearly, can you describe to me….?" Physicians rarely assess patient recall or understanding [34]. However, studies demonstrate that the teach back method does not result in longer visits and has been associated with diabetic patients having better metabolic control [34], asthmatic patients being better able to self manage their disease [21], and research participants being more likely to comprehend informed consent information [49].

Reinforcement

In addition to clear, interactive verbal instruction, use of the teach back approach may suggest the need for additional reinforcement modalities, such as drawing pictures or graphs. Rigorous evidence on the benefits of multimodal teaching aids is lacking, but there is some promising research. A Cochrane review has shown that providing both written and verbal information increases knowledge and satisfaction compared with verbal information alone [50]. Experts recommend considering the following key points when writing information for patients: keep the points to the necessary minimum; write legibly with large font (use at least a 14-point, nonserif font such as Arial or Helvetica); use the active voice (instead of "Your medicine should be taken at noon" write "Take your medicine at noon"); keep sentences no longer than 8 words; keep the reading level at the 5th-grade level or below; and use pictures [37].

Pictures, when added to written and verbal information, appear to be helpful. A study of communicating medication regimens for anticoagulant care demonstrated much higher understanding when visual aids were used in comparison with verbal communication alone, especially for patients with LHL [51]. A subsequent randomized trial of these visual aids combined with the teach back approach dramatically improved anticoagulant outcomes [52]. The combination of pictographs added to verbal counseling [53] and pictures added to text [54] also improved LHL patients' recall and adherence to treatment recommendations and decreased medication errors [55].

Video may also be an effective teaching modality, as it can be watched at a patient's own pace, is standardized in content, and does not rely on the skills of the clinician to convey information. The use of video and related multimedia technologies have been shown to be successful in communicating complex ideas in well-educated populations, but data are less robust in populations with LHL [56,57]. Studies of multipronged approaches that include video plus written information and verbal recommendations have been shown to improve cancer screening rates in patients with LHL, but whether the video or other interventions caused this change is unknown [31,58]. Some studies in LHL populations have found no improvement in knowledge for video versus written information [59–61]; however, one study has shown a powerful effect of video in helping LHL patients engage in complex medical decision making [62]. The use of video requires more study.

If available, it is important to enlist the help of ancillary services, such as pharmacists for help with medication reconciliation, nutritionists for help in dietary recommendations, health

educators, and social workers [63]. Use of family members, caretakers, or any of the patients' support network can be particularly helpful in reinforcing the information presented. This may require having family or friends accompany patients to their appointments or sending home written information.

Numeracy and Presenting Risk Information

Patients with LHL and limited numeracy often have difficulty weighing risks and benefits [64–67]. Fagerlin et al [64] describes 6 techniques to improve communication of numeric and risk information. First, use multiple formats to present information (verbal, written, numbers, pictographs, graphs) [64,68–70]. While there is no consensus, it appears that patients with limited numeracy prefer pictographs for single probabilities and bar graphs when needing to compare risks [71,72]. Second, use a consistent denominator to facilitate comparisons and prevent confusion (eg, 1 out of 100 vs. 10 out of 100) [68]. Third, present risk in terms of a time span that is salient to patients, such as a 10-year period (rather than lifetime) [73]. Fourth, provide absolute risks (ie, a decrease from 4% to 2%) rather than relative risk framing (ie, a reduction of 50%), especially when risk reductions are small [74]. Fifth, present risk using frequencies (eg, 5 out of 100 people) instead of percentages [72,75]. Finally, because patients with lower numeracy skills are strongly influenced by framing [76], avoid using only positive (gain) or negative (loss) framing and, instead, try to use both (eg, "5 in 100 are expected to get the outcome, meaning that 95 out of 100 will not get the outcome") [77].

Medication Reconciliation

Dosing schedules should be accommodated to patients' daily routines [35] with a focus on using the fewest number of pills possible and coordinating the dosages for similar times during the day to help with recall [35,78,79]. Once prescribed, it is important to confirm regimen dosage concordance (eg, "Tell me/show me *exactly* how you take your warfarin) so as to promote safety and effectiveness [16]. Incorrect answers to this question can then trigger further interventions. Pillboxes, Medi-sets, and other medication organizers can be used in conjunction with ancillary support such as pharmacists and pharmacy technicians [35,63,80,81]. Visual medication schedules that allow the picture of the pill to be placed on a weekly calendar have been shown to be effective, especially in patients with LHL [52,82]. For clinicians who do not have access to this technology, affixing an actual pill to a paper calendar can be effective. Many patients also benefit from dedicated medication review and reconciliation visits. Including pharmacists in this multidisciplinary approach has been shown to increase adherence and reduce adverse drug events [83,84].

Geriatrics

Special considerations for clear communication for geriatric patients include accommodating visual, hearing, and cognitive impairment [85]. Given the high incidence of glaucoma, cataracts, and macular degeneration, it is recommended to use at least a 14-point nonserif font, nonglossy written materials that use bright contrasting colors, and lighting that prevents glare [86]. Updated eye examinations are recommended and the use of magnifying lenses may also be helpful. Audiology screening is also recommended for seniors. When communicating with hearing-impaired patients, it is important to face the patient as they may be dependent on lip reading, decrease background noise, and position the patient with his/her back against the wall [86]. The use of assistive hearing devices such as the Pocket Talker can also be helpful [87, 88], In addition, 22% of patients older than age 70 have cognitive impairment and 14% have dementia [89,90]. Although teach back and other clear health communication and reinforcement strategies may help those with mild cognitive impairment, patients with frank dementia are not likely to benefit. In this case, effective communication strategies need to be directed to caregivers, many of whom may have LHL.

System-Patient Level Interventions

The policy and regulatory context is evolving to include a focus on improving communication [30], and health system planners are increasingly interested in identifying evidence-based, scalable solutions. At the system level, helpful interventions for patients with LHL include designing and offering easy-to-understand health education materials, improving medication drug labeling, designing and offering chronic disease management programs, creating an empowering environment, and offering communication training to clinicians.

Employing Appropriate Health Education Materials

While offering easy-to-read materials is not a panacea, it is a step toward empowering patients to be more active participants in their health care [31]. When selecting health education materials, select those with large-font text written at or below the 5th-grade level, pictures that help explain the text, and clear headings and layout that enhance readability. We recommend evaluating suitability of written materials with standardized assessment tools. The Suitability Assessment of Materials (SAM) method uses a set of criteria based on 22 factors within 6 categories: content, literacy demand, graphics, layout and typography, learning stimulation/ motivation, and cultural appropriateness [37,91]. Each factor is rated as superior, adequate, or not suitable, and the ratings can guide revisions. The Lexile Framework [92] is a method for measuring the readability of text based on word frequency and sentence length. Scores can be translated into corresponding reading grade levels. The Lexile analyzer (MetaMetrics, Durham, NC) is available for free online use (www.lexile.com).

Involving the target population in the design of the materials also improves effectiveness [39]. Using these techniques improves acceptability [93,94], activates patients to initiate discussions with providers [94], in some cases enhances understanding [93,95,96], and has been used to develop low literacy tools to support behavior change in diabetes [97] and advance care planning [98]. There are a number of Web sites that host links to literacy-appropriate health education materials [99–104]. While knowledge gained from easy-to-read materials increases for patient with both limited and adequate literacy, the size of the knowledge gap between them often remains the same [105,106]. No studies to date have demonstrated that improved written materials improve long-term outcomes.

Standardizing Medication Drug Labels and Drug Information

Approximately 1.5 million preventable adverse drug events occur each year in the United States and a significant proportion of these events are due to errors in patient self-management [107,108]. Patients with LHL are most likely to misinterpret medication labels [109,110], likely because they often use difficult language and icons that do not match the text or do not have universal meaning [111,112]. Wolf [113] in conjunction with the American College of Physicians have developed recommendations to improve safety in medication prescribing by working with the U.S. Food and Drug Administration to use simple language and promote universal pictures on drug labels. Their guidelines include using concrete instructions (eg, instead of "take 3 times a day," use "take at 8 AM, 4 PM and midnight"); using drug labels that highlight, underline, and/or use large font for the drug name and dosage and minimize information pertaining to the pharmacy or prescription number; and using universal pictures that match the text [107]. Finally, the drug label, the pill bottle, and the accompanying health education should be designed together to avoid conflicting information [107,114].

Employing Disease Management Programs

Disease management programs can improve the health of patients with LHL. For example, a heart failure program provided verbal, written, and pictorial education focused on concrete actions for self care, such as how to titrate their diuretic medication and when to call or come

to the clinic. The information was presented in an educational session and was reinforced with follow-up phone calls to identify patients who needed additional follow-up. The intervention was acceptable to patients of all HL levels and associated with improvement in self-care behavior and heart failure-related symptoms [115]. The program also resulted in lower hospitalization rates and all-cause mortality, with differences more pronounced in patients with LHL [116]. A diabetes case management program tailored to patients' literacy levels disproportionally helped patients with LHL achieve target glycosylated hemoglobin levels compared with controls [47]. Another beneficial intervention is the use of weekly interactive, automated telephone calls in which patients use the telephone touch-pad to respond to automated prompts. Patient information is sent to a nurse manager who can support patients in their self-management [117]. This approach disproportionately engaged patients with LHL in behavior change and improved functional status. It also identified potential adverse events in between medical visits and may therefore be a way to prevent problems that lead to worse clinical outcomes [108].

Creating an Empowering Environment

Given the shame experienced by many patients with LHL and the implicit power imbalance in patient-clinician relationships, creating an empowering environment within the clinic or hospital setting has been recommended. Are the signs in the clinic or building clear? Are the forms that are given to patients at the front desk difficult to read? Are the telephone triage systems easy to navigate? Are high literacy demands being unduly placed on patients that preclude them from accessing care and navigating the system? Strategic changes in the clinical setting can be made through structured assessments [118]. An empowering environment can also be fostered by encouraging questions. Campaigns created to achieve this end include the Agency for Healthcare Research and Quality–sponsored "Questions Are the Answer: Get More Involved With Your Health Care" campaign [119] and the "Ask Me 3" campaign from the Partnership for Clear Health Communication, which prompts patients to ask 3 essential questions at every encounter: (1) What is my main problem? (2) What do I need to do? and (3) Why is it important for me to do this? [120].

Clinician Communication Training

Many of the skills inherent to clear health communication can be offered as part of continuing medical education. Courses are often offered at national medical meetings and a free online course is available from the U.S. Department of Health and Human Services [121]. Other Web sites offer helpful information about clear health communication to clinicians and policymakers [99,103]. There have been recent calls for inclusion of health literacy training in the Accreditation Counsel for Graduate Medical Education curriculum and board examinations on clinician-patient communication [43,44]. Clinician educators have begun to include health literacy into medical school curricula and future assessments as to their effects on patient outcomes are pending [122,123].

Community-Patient Level Interventions

Community interventions that may be helpful in reducing health literacy–related disparities include referrals to adult education and literacy programs, use of lay health educators and health navigators, and harnessing the media. Participation in adult literacy classes, often offered through public libraries, has been shown to reduce depressive symptoms among people with depression when compared with controls [124,125]. While literacy training for adults tends to increase literacy level by only 1 or 2 grade levels per year, such training may provide peer support and increase patients' confidence to ask questions within the health care context [42]. Lay health educators and or navigators are often trusted members of their community who can communicate across culture, language, and literacy level [126]. This approach has been

successful in improving knowledge, behavior change, and health outcomes [127–131] and has been shown to deliver cost savings [132]. There is also good evidence to suggest that health information coverage by the mass media can reach communities of all health literacy levels and may be powerful education tools for public health campaigns [133,134].

Future Directions

Some interventions have been useful in well-educated groups but need more study in LHL populations. For instance, group medical visits have not been uniformly found to be effective for patients with literacy or language barriers [117]. Similarly, decision aids, which require patients to interpret risk and complex information, are beneficial for well-educated groups but have been less well studied in LHL populations [57,135]. Furthermore, it is unclear whether emerging communication technologies will improve care or increase the communication divide for patients with LHL. The use of computer kiosks with touch screens [136], the use of the internet for health education [137,138], and access to online health records [139] have been shown to be acceptable and useful in well-educated populations. However, many large health care organizations are beginning to adopt these technologies without input from patients with LHL. Inappropriately designed and inadequately tested technologies have the potential to adversely affect clinician-patient communication and increase health disparities.

More study is needed to understand how to design interventions to decrease health disparities in patients with LHL. Areas of needed research include further validating the effects of clear health communication on health outcomes, assessing mediators other than communication in the pathway between literacy and poor health outcomes, further assessing the heterogeneity of LHL patients so as to develop appropriate interventions (eg, for patients with dementia or learning disabilities), and assessing the best use of emerging technologies in patient with LHL. Furthermore, as limited English proficiency and limited literacy often coexist, interventional research must also focus on language barriers and the use of interpreters [140]. As the field of health literacy moves forward to answer these questions, rigorous study design and randomized trials are needed.

Summary

LHL is prevalent and is associated with many poor health outcomes. While the explanatory pathways for these relationships are complex, many of the poor outcomes associated with LHL may be caused or exacerbated by inadequacies in both clinician-patient and system-patient communication. Feasible interventions at the clinician-patient level (eg, patient-centered communication, clear communication techniques, teach back methods, and reinforcement), at the system-patient level (eg, clear health education materials, visual aids, clear medication labels, tailored self-management support programs, and creating shame-free clinical environments), and at the community-patient level (eg, adult education referrals, lay health educators, and harnessing the mass media) can improve care for patients with LHL. Because most of these strategies can benefit all patients regardless of health literacy level, clinicians, health system planners, and health policy leaders should promote the uptake of such strategies as part of routine health care.

Acknowledgments

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Table 1

Interventions for Patients with Limited Health Literacy

CLINICIAN-PATIENT LEVEL

Patient-centered communication

Assess what patients already know ("What do you already know about…?")

Identify "What do I need to do?" rather than "What do I need to know?"

Clear health communication

Slow down

Use plain language, avoid jargon (eg, "not cancer" instead of "benign")

Attempt to match patient's vocabulary

Keep number of points to ≤ 3

Confirmation of understanding

"What questions do you have?"

Teach back, teach-to-goal (does not increase visit duration)

Ask patients to say back or demonstrate what was just taught ("I've just said a lot of things. To make sure I did a good job and explained things clearly, can you describe to me….?")

Reinforcement

Use multiple modalities (pictures, graphs, drawings)

Written information

Keep points to a minimum

Write legibly with large font

Use the active voice (eg, "Take your medicine at noon")

Short sentences ≤ 8 words

5th-grade level

Use patients' support network/family

Numeracy and risk

Use consistent denominator

Keep time span ~ 10 years and consistent

Provide absolute risks, not relative risks

Present risk frequencies not percentages

Avoid solely positive or negative framing

Medication reconciliation

Fit dosing schedule around patient's daily routine

Simplify regimens as much as possible

Confirm regimen dosage concordance (eg, "Tell me/show me *exactly* how you take your…")

Use pillboxes, Medi-sets, and other medication organizers

Use visual medication schedules with computer programs or affixing pills to schedule

Make follow-up appointments to assess compliance and side effects

Include pharmacists if possible

Geriatrics

Accommodate for visual impairment

Updated eye examination

Use 14-point nonserif fonts (Arial, Helvetica)

Use nonglossy materials with bright contrasting color

Use light that cuts down on glare

Use magnifying lenses

Accommodate for hearing impairment

Updated audiologist appointments'

Face the patient, put patient's back to wall

Use assistive devices (Pocket Talker or hearing aids)

Accommodate for cognitive impairment

Teach back beneficial for mild cognitive impairment

For dementia, elicit help from family and multidisciplinary team

SYSTEM-PATIENT LEVEL

Health education materials

Large font

Text at 5th-grade level

Pictures

Clear headings and layout

Include target population in design of tools

Medication drug labels

Use concrete instructions ("Take at 8 AM, 4 PM and midnight")

Label should focus on the drug and the dosage

Use universal pictures that match the text

Drug label, pill bottle, and health education should be designed together and match

Disease self-management support

Proactive, used to prevent poor outcomes before they happen

Disease-specific (eg, diabetes or congestive heart failure)

Tailored to literacy and patient-perceived barriers

Multidisciplinary disease management education followed by telephone call back

Automated telephone calls

Creating an empowering environment

Make the signs clear

Make the forms easy to read

Make the telephone triage system easy to navigate

Teach patients to ask:

1. What is my main problem

2. What do I need to do about the problem

3. Why is it important for me to do this?

Clinician training

Continuing medical education credits

Clear health education while clinicians are in training

Requirements for board examinations

COMMUNITY-PATIENT LEVEL

Referrals to adult literacy classes

Use of lay health educators/navigators

Use of mass media to disseminate health informatio