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A Tale of Two Handouts: Applying Health Literacy Recommendations to Improve Readability of Printed Patient Education Materials

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Healthy People 2010[1] defines health literacy as "the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions." This definition is the cornerstone of the Primary Prevention Pilot, a Healthy Lifestyles Special Project at Marshfield Clinic. The focus of the project is to develop printed education materials promoting healthy lifestyle changes to help prevent hypertension, dyslipidemia, diabetes and obesity in children and adults.

The project includes an assessment and evaluation of the education materials currently in use at Marshfield Clinic, as well as identifying the need for new educational handouts on healthy lifestyles and primary prevention topics. Another main component of the project is the development of a toolbox of resources, including recommendations for health literacy and templates for improving the readability of printed patient education materials.

A Collaborative Approach

The Primary Prevention Pilot is a collaborative approach to prevention education. Several departments are working together to improve the printed materials given to patients at Marshfield Clinic. The project involves over 40 physicians and other medical and non-medical staff from Quality Improvement and Care Management, Patient Education and Nutrition Services, the Healthy Lifestyles Program, the Center for Community Outreach, Occupational Health, Work/Life, ProActive Health, Family Health Center, and Security Health Plan.

Assessing Perceptions and Printed Words

The project began with an assessment to determine which prevention education materials were used most often with patients, and to collect general feedback on the quality and accessibility of these materials. An electronic survey was sent to 73 primary care departments within the Marshfield Clinic system. Department managers were asked to distribute a link to the survey Website to all staff who have direct contact with patients, as well as those involved in ordering education materials used with patients during office visits. Surveys were completed by physicians, advance practice providers (Physician Assistants, Nurse Practitioners, etc.), Registered Nurses, medical assistants, and other staff. See Table 1 for total surveys returned in each of these categories.

A series of introductory statements on the survey were designed to gauge health care providers' perceptions regarding the accessibility and readability of available patient education materials. One statement in particular asked survey participants their opinion regarding the reading level of printed patient education materials currently in use at Marshfield Clinic. Participants were asked to agree or disagree with this statement: *Primary prevention education materials available through the Marshfield Clinic online patient education catalog are written at an appropriate reading level for most patients*. The results, listed in Table 1, showed that as a group, 59% agreed to the statement, 20% disagreed, and another 21% indicated they were not able to form an opinion regarding reading level of patient education materials.

The physician group showed 54% agreed with the statement, while only 7% disagreed. For Registered Nurses 58% agreed to the statement, but 28% (4 times as many in the physician group) had the opinion that printed education materials used at Marshfield Clinic are not written at an appropriate reading level for most patients. While the medical assistant group had the least number of returned surveys, 100% of those responding agreed that printed education materials are written at an appropriate reading level.

Table 1: Survey Totals and Perception of Reading Level

	Number of Returned Surveys	Primary prevention education materials available through the Marshfield Clinic online patient education catalog are written at an appropriate reading level for most patients.		
		Agree	Disagree	Not Sure
All Categories Combined	**138**	**59%**	**20%**	**21%**
Physicians and Advanced Practice Providers	46	54%	7%	39%
Registered Nurses	45	58%	28%	14%
Medical Assistants	15	100%	0%	0%
Other	27	56%	26%	18%

The difference of opinion among survey responders in their respective groups is interesting in and of itself; but, it is the second part of the assessment that provides the key to understanding how readability is perceived among health care providers.

Most health care materials are written at a 10th-grade level or higher.[2] However, most adults read between the eighth and ninth grade level, with 21 to 23 percent of adults reading at the lowest reading level, approximately fifth-grade or lower.[3] The problem of inadequate literacy is greater in older patients. The majority of patients older than 60 years perform at the lowest levels of literacy.[4] For patients whose primary language is not English, the problem is compounded.[5] A survey of patients at two hospitals revealed that 35 percent of English-speaking patients and 62 percent of Spanish-speaking patients had fair to poor health literacy.[6]

Knowing these facts, the simple conclusion is that printed patient education materials should be written at a reading level between sixth and eighth grade. While our survey did not ask health care providers to determine the reading grade level of the printed materials they use with their patients, we assume that most would agree that materials should be written at a level that increases readability, comprehension and compliance among the majority of patients. There will be special populations and unique patients that require additional assistance regarding patient education, but the standard should be to produce written education materials that meet the health literacy needs for the majority of patients.

Our assessment continued by evaluating a sampling of the printed patient education materials currently being used with patients at Marshfield Clinic. In keeping with the focus of our project, we only evaluated patient education sheets on healthy lifestyles and primary prevention topics. We also excluded printed education materials purchased from vendors outside of Marshfield

Table 2: Assessment of SMOG Grade Levels

SMOG Grade Level	Titles of Existing Patient Education Materials
15.4	How Much Are You Eating
13.4	Lifestyle Modifications to Manage Hypertension
12.1	Healthy Brown Bag Lunches
12.0	Body Mass Index (BMI)
11.7	Cholesterol Management Eating and Exercising for Heart Health
11.4	Your Cholesterol Numbers
11.0	Controlling Your Risk Factors for a Heart Attack
11.0	Low-Cholesterol/Low-Fat Diet Food List
10.9	Triglycerides
10.8	Tips to Reduce Cholesterol/Saturated Fat Intake
9.7	Dining Out the Healthy Way
11.8	**Average SMOG Grade Level**

Clinic and those printed from copyright-free or public domain Web sites such as the National Institutes of Health and the Center for Disease Control and Prevention. Our focus was on printed patient education materials written and produced by health care providers within Marshfield Clinic.

Reading grade levels for 11 patient education handouts were calculated using the following SMOG[7] formula:

$$1.0430\sqrt{\text{number of polysyllables} \times \left(\frac{30}{\text{number of sentences}}\right)} + 3.1291$$

The SMOG readability formula was chosen over the Flesch-Kincaid Grade Level formula because it uses a more precise formula to calculate a high (0.985) correlation with the grades of readers who had 100% comprehension of test materials. Also, literacy specialists warn that Flesch-Kincaid scores tend to underestimate actual reading grade level because they are often several grade levels below results obtained using other measures.[8] The results of our evaluation showed an average SMOG grade level of 11.8 for the sample patient education handouts, with the highest scoring a grade level of 15.4 and the lowest a grade level of 9.7. See table 2.

Our assessment supports the finding that most health care materials are written at a 10th-grade level or higher. Because the average reading grade level was 11.8 (three to five grade levels higher than what is recommended), it also supports the finding that many health care providers misjudge the reading grade level of the education materials they often use with patients. As noted in Table 1, only 7% of physicians and advanced practice providers, and 28% of Registered Nurses participating in our survey recognized the patient education materials scored in Table 2 as not being written at an appropriate reading level for most patients. Another 39% of physicians and advanced practice providers, and 14% of Registered Nurses were not able to form an opinion regarding the reading level of the patient education materials in our survey.

The final phase of the assessment involved evaluating patient education handouts with high reading grade levels using health literacy recommendations and checklists created by a number of credible organizations including the Centers for Medicare and Medicaid Services[9], the National Institutes of Health[10], the Center for Disease Control and Prevention[11], and the American Medical Association[12]. Relying on these and other resources, a list of health literacy recommendations was compiled that, when applied to existing patient education handouts, effectively lowered the reading grade levels of the printed materials. The list of recommendations used is displayed in Figure 1.

Figure 1: Health Literacy Recommendations Checklist

Content/Style
- □ The material is interactive and allows for audience involvement, using devices to engage the reader—such as Q & A, true-or-false, problem-solution, stories, dialogues, and vignettes.
- □ A conversational style is used whenever appropriate that includes the patient and improves readability.
- □ One- or two-syllable words are used and all unnecessary multi-syllable words are replaced with simpler words.
- □ Technical and medical terms are defined clearly, and only used when necessary.
- □ Content is limited to what patients really need to know.
- □ "How to" advice is offered, urging behavior that is feasible and culturally appropriate for the intended audience.
- □ The material tells the reader how and where to get help or more information.

Layout
- □ Type style and size of print are easy-to-read; type is at least 12 point.
- □ The document uses an effective combination of readable type styles to get good contrast between the text and the headings and titles.
- □ Labels for sections, headings, and subheadings are clear and informative to the intended audience.
- □ Lines of text are an appropriate length for easy reading (no more than about five inches, set in columns).
- □ Layout balances white space with words and illustrations.

Visuals
- □ Visuals are relevant to text, meaningful to the audience, and appropriately located.
- □ Illustrations and photographs are simple and free from clutter and distraction.
- □ Illustrations show familiar images that reflect cultural context.

Readability
- □ Readability analysis is done to determine reading level. The piece should be written at the 6th to 8th grade level.

Applying Health Literacy Recommendations to Improve Readability

The Primary Prevention Pilot project team selected the patient education handout titled "Your Cholesterol Numbers" as a pilot project for applying the health

Figure 2: Original Patient Education Handout (Your Cholesterol Numbers) Before Health Literacy Recommendations Applied

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YOUR CHOLESTEROL NUMBERS

Name _____

Cholesterol	This is a fat in the blood. Elevated cholesterol is recognized as being responsible for increasing the risk of coronary/heart disease. Cholesterol should be less than 200 in a fasting state. Yours was _____
HDL cholesterol	High-density lipoproteins (HDL) are believed to take cholesterol away from cells and transport it back to the liver for processing or removal. Persons with high levels of HDL have less heart disease. The HDL's have become known as the "good" cholesterol. HDL should be greater than 45. Yours was _____
LDL cholesterol	Low-density lipoproteins (LDL) contain the greatest percent of cholesterol, and may be responsible for depositing cholesterol in the artery walls. For that reason, they are known as "bad" cholesterol. This level should be less than 130 in most people. • If you have 2 or more risk factors for heart disease (overweight, diabetes, high blood pressure, smoker, HDL cholesterol below 40, physically inactive) your LDL should be less than 100. • If you have coronary artery disease your LDL should be 70 or less. Yours was _____
Triglycerides	Like cholesterol, this is a fat in the blood contributing to hardening of the arteries. Triglycerides should be less than 150 in a fasting state. Values between 150 and 200 are considered high. Weight loss and a low fat diet will lower this value. Avoiding sugars and alcohol will lower it as well. Yours was _____

Figure 3: Revised Patient Education Handout (My Cholesterol Numbers) After Health Literacy Recommendations Applied

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My Cholesterol Numbers

Name _____ Date _____

Type	Goal	My Numbers*
Total Cholesterol This is all of the fat in your blood. High cholesterol means that you have a greater chance of heart disease.	Less than 200	_____
High Density Lipoproteins (HDL) HDL is often called "good cholesterol." It helps keep bad cholesterol from building up in your arteries.	Greater than 40	_____
Low Density Lipoproteins (LDL) LDL is often called "bad cholesterol." It is the main source of cholesterol that builds up in arteries. You and your doctor will decide your LDL goal based on your risk for heart disease and other health conditions.	Less than 130 (if you have 2 or more risk factors for heart disease or diabetes: high blood pressure, overweight, smoking, not physically active, HDL less than 40) Less than 100 (if you have heart disease or diabetes) Less than 70 (if you have heart disease or diabetes and other risk factors)	_____
Triglycerides This is another form of fat in the blood. High levels of triglycerides increase your risk for heart disease.	Less than 150	_____

*Not at goal? See the back of this page for your cholesterol action plan.

Figure 3: Revised Patient Education Handout (My Cholesterol Numbers) After Health Literacy Recommendations Applied (continued)

Cholesterol control: get to your goal!

If your numbers are not at goal, there are steps you can take to get your cholesterol under control. Here are some suggestions:

Eat Healthy

- Choose foods low in saturated fat such as fat-free or 1 percent dairy products, lean meats, fish, skinless poultry, whole grain foods, and fruits and vegetables.
- Look for soft margarines that are low in saturated fat and contain little or no trans fat.
- Limit foods high in fat such as ribs, steak, bacon, sausage, and foods that are deep fried.
- Limit foods high in cholesterol such as liver and other organ meats, egg yolks, and full-fat dairy products.

Get Active

- Regular physical activity (30 minutes on most, if not all, days) is recommended for most people. It can help raise HDL and lower LDL and is especially important for those with high triglyceride or low HDL levels who are overweight.

Manage Your Weight

- Losing weight (if you are overweight) can help lower LDL.

My Cholesterol Action Plan

I will work on the following short-term goals (check one or more below) over the next _____ weeks:

Healthy Eating:

- ☐ I'll eat more fruits and vegetables.
- ☐ I'll eat more whole grain foods.
- ☐ I will cut back on my serving sizes.
- ☐ I'll try low-fat versions of the foods I usually eat.
- ☐ When cooking, I'll bake, broil, or grill. When frying foods, I will use nonstick pans and cooking spray.
- ☐ Other steps I'll take to cut down on calories and fat are:

  _____

  _____

  _____

Physical Activity:

- ☐ I'll talk with my health care provider about how much physical activity is best for me, and start doing as much as I can.
- ☐ I'll take a walk every day, working up to 30 minutes of brisk walking, 5 or more days a week.
- ☐ I'll choose an activity I enjoy, such as working in the yard or riding a bike, and do it several times a week.
- ☐ Other ways I'll add physical activity to my day are:

  _____

  _____

  _____

I will work on the following long-term goals (check one or more below) over the next _____ months:

- ☐ Weight loss goal of:

  _____ pounds

- ☐ Quit using tobacco
- ☐ Reach my blood pressure goal of:

  _____/_____

- ☐ Reach my cholesterol goals of:

  _____ Total cholesterol

  _____ HDL

  _____ LDL

  _____ Triglycerides

literacy recommendations displayed in Figure 1. The original document, displayed in Figure 2, had a SMOG reading grade level of 11.4 and a Flesch-Kincaid reading grade level of 8.3. As noted earlier, health literacy experts suggest adding at least two grade levels to the Flesch-Kincaid score for a more accurate measurement. The reading levels using both formulas show a score that is several grade levels higher that what is recommended. After applying the health literacy recommendations (displayed in Figure 1), the SMOG and Flesch-Kincaid reading grade levels dropped to 8.81 and 4.9 respectively. See Table 3.

Table 3: Comparison of Original Handout with Revised Version

	Before	After*
Word Count	223	143
Number of sentences	17	16
Average words per sentence	13.12	8.94
Average syllables per sentence	20.0	12.31
Flesch-Kincaid grade level	**8.3**	**4.9**
SMOG grade level	**11.4**	**8.81**

*Compares original (before) handout to the first page of the revised (after) handout.

The most significant revisions made to the original document that effected the reading grade level scores included removing all unnecessary multi-syllable words and using simpler words whenever possible, and deleting all information that was not necessary to the key message and use of the handout. While the number of sentences remained nearly equal, the word count, average words per sentence, and average syllables per sentence were reduced significantly. The revised document is shown in Figure 3.

Other changes to the document may not have directly lowered the reading grade level but, according to the sources where the health literacy recommendations were drawn from, they could have an impact on the readability of the handout and increase the likelihood that patients will read and comprehend the content. Among these revisions are using "my/I" instead of "you/your" (when appropriate) to include the patient and create opportunities for goal setting and shared decision making between the patient and health care provider; clearly distinguishing the target goals for cholesterol, HDL, LDL, and triglycerides and making it easier for patients to make direct comparisons between these target goals and their cholesterol screening results; including action steps and clear examples of what patients can do if their screening results are not at goal; and providing an action plan that can be used as a point of discussion between patients and their physician or other health care providers and patient educators. The action plan urges changes in behavior that are feasible for most patients and allows for flexibility when necessary. Including phrases such as *you and your doctor will decide your goals* allows patients to take an active role in making decisions about their care. Patients who are involved in the management of their care have better health outcomes and are more likely to seek health information and engage in healthy behaviors.[13]

Moving Beyond the Pilot Project

The goal of the Primary Prevention Pilot includes the development of a toolbox of resources. One of the main components of the toolbox is a health literacy style guide that not only lists recommendations for improving the readability of printed patient education materials but serves as a "how to" for creating or revising existing documents to meet the literacy needs for the majority of patients. The results of our survey show that greater awareness and understanding of health literacy needs to come through educating not only the health experts who write the text of patient education materials, but also the typesetters who create and print the documents. Providing health literacy recommendations, templates, and examples that illustrate how content and design both effect the readability of printed patient education materials is only the beginning.

Collaboration with other health care organizations, local literacy councils, schools, social services and public health organizations can expand the resources and knowledge needed to improve health communication. Healthy People 2010 proposes activities around which such collaboration can rally. These activities include (1) initiatives to build a robust health information system that provides equitable access, (2) development of high-quality, audience-appropriate information and support services for specific health problems and health-related decisions for all segments of the population, especially underserved persons, (3) training of health professionals in the science of communication and the use of communication technologies, (4) evaluation of interventions, and (5) promotion of a critical understanding and practice of effective health communication.[14]

Realizing that creating printed patient education materials that meet the health literacy needs of the majority of patients is only a small part of the work necessary to reach the Healthy People 2010 objectives, it is, nonetheless, an important part of the process and a logical place to begin.

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More Information

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