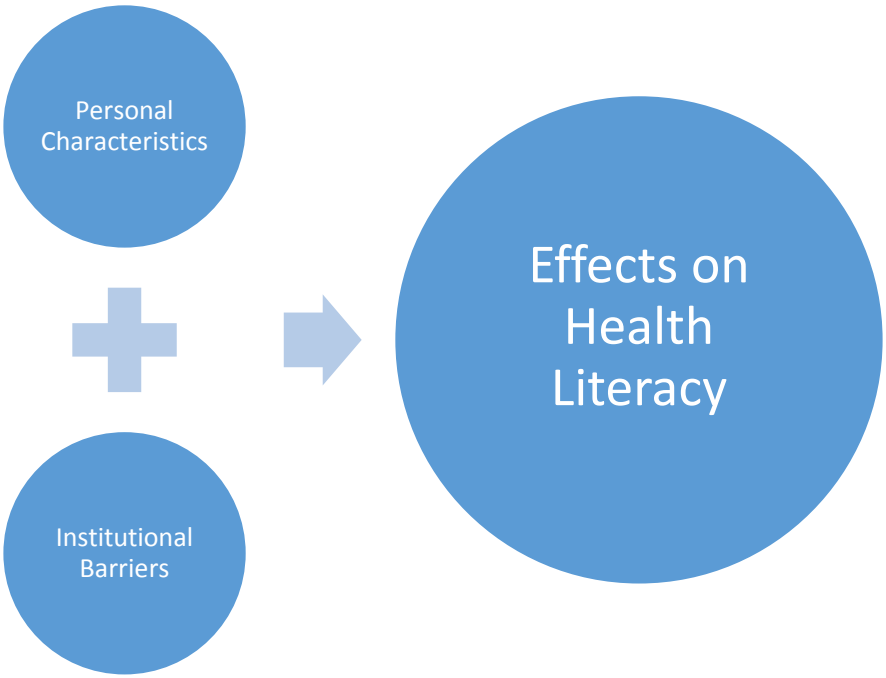
Assessing the Health Literacy Attributes of an Academic Medical Center

The University of Tennessee Medical Center, Knoxville, TN



Health Literacy Research Task Force

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Executive Summary

One of the most serious challenges in the United States today is the crisis in the nation's healthcare delivery system. As life expectancy makes positive gains, so do health disparities and unsustainable medical costs. Underlying these headline grabbing crises is a silent crisis that is restricting the healthcare industry's ability to achieve its most important goal of improving patient health. This crisis is health literacy.

Health literacy is defined 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." Low health literacy affects people of any age, income, race or background, and it puts an estimated 90 million Americans at risk. Additionally it costs the nation as much as $238 billion yearly.

The U.S. Department of Health and Human Services estimates that nearly nine out of ten adults may lack the skills needed to manage their health and prevent disease. Whether it's interpreting instructions on a prescription bottle, deciphering pages of discharge instructions, completing a health history, or navigating the healthcare system, low health literacy predisposes patients to poor health outcomes and higher rates of preventable hospital admissions.

At the state level, Tennessee's health is poor, ranking as one of the least healthy states for the last 20 years. Because of this, Tennessee is now facing an epidemic of preventable chronic diseases such as diabetes, heart disease, obesity, and certain types of cancer. The state's overall low literacy rates and resulting low health literacy rates are significant contributors to the state's low health ranking.

Specific to the impact of low health literacy, patients with health literacy deficiency are less able to manage chronic conditions, have increased readmission rates, frequently return to the emergency department for the same conditions, and are less likely to get health screenings. For these reasons, healthcare costs are higher for low health literate patients, who often arrive in the healthcare setting with advanced stages of disease.

At first glance, health literacy appears to be a problem that lies with the patient and is incumbent upon them to acquire the necessary skills. However, it is now understood, and generally accepted, that the primary responsibility for improving health literacy lies with the healthcare professionals and systems. These healthcare professionals must work together to ensure that health information and services can be understood and used by all Americans.

The University of Tennessee Medical Center (UTMC), a large 600-bed academic medical center in East Tennessee, has assumed a leadership role to ensure Tennesseans receive the health information they need. Working in partnership with The University of Tennessee Graduate School of Medicine, UTMC has developed a Health Literacy Initiative. Among the strategic goals of the Initiative are:

- Establishing health literacy as a UTMC organizational value.
- Ensuring successful access to care and use of services, self-care of chronic conditions, and maintenance of health and wellness for East Tennesseans, then applying it regionally and nationally.
- Enabling patients to have a more active role in their healthcare decisions and management.
- The reduction of healthcare costs, patient re-admissions, and preventable adverse events.
- Reducing the number of people likely to skip necessary medical tests and procedures because they lack an understanding of prevention and self-management.
- Improving the medical center's professionals' ability to communicate with patients and be understood.
- Empowering patients to talk with their healthcare provider and understand their instructions for better health.

To that end, UTMC has begun a broad spectrum of actions, including the following:

- Health Information Center (HIC) – UTMC opened its HIC in 2014. The HIC offers a free, extensive health library, virtual and printed resources and walk-in assistance with dedicated medical librarians and library associates who are certified health information specialists and can help people research specific health conditions. Since opening, over 200,000 people have visited the Health Information Center.
- Health Literacy Forum 2015 – To launch UTMC's Health Literacy Community Outreach, the medical center conducted Tennessee's first-ever Health Literacy Forum. Designed to educate and generate conversation specific to health literacy needs in Tennessee, the forum was attended by 100+ healthcare professionals, educators, librarians and government/business leaders. Response to the forum was very favorable.

Through the Health Literacy Initiative, UTMC recognized that many of its patients, from the 21-county region it serves had "*Below Basic*" and "*Basic*" health literacy skills. The medical center leadership recognizes how important it is to engage patients in their healthcare, and the barrier that low health literacy creates to patient engagement. But just as importantly, the leadership recognizes that beyond the characteristics of patients, the healthcare environment creates additional barriers to engaging low health literacy patients.

The U.S. Department of Health and Human Services' National Action Plan to Improve Health Literacy recognized the complexity of the health care environment, outlined specific barriers, and challenged health care organizations to "Promote changes in the health care delivery system that improve health information, communication, informed decision making, and access to health services." To meet this challenge, and as a part of the Health Literacy Initiative, the leadership of the medical center formed a task force in 2016 to assess the organization's state of health literacy. The objective was to provide data that could serve as a catalyst for promoting changes in the healthcare system at UTMC.

The task force utilized the Health Literacy Environment of Hospitals and Health Centers (HLEHH), which offered a set of tools to measure five aspects of the healthcare organization that impact patients with low health literacy: Print Communication, Oral Communication, Navigation, Policies and Protocol, and Technology. The scope of the project included the following: analyzing 150 print patient education documents, interviewing 298 patients, capturing feedback from seven navigators, measuring the knowledge of 77 administrators relative to the medical center's policies and protocols, and assessing technology using an authoritative source.

Overall, UTMC's aggregate score ranked in the highest of the HLEHH three-category scoring rubric, which translates to "continue to monitor and eliminate literacy-related barriers." Three of the individual areas also scored in the highest category: Print Communication, Navigation, and Technology. The two categories that scored in the middle category, indicating opportunity for improvement were: Oral Communications, Policies and Protocol.

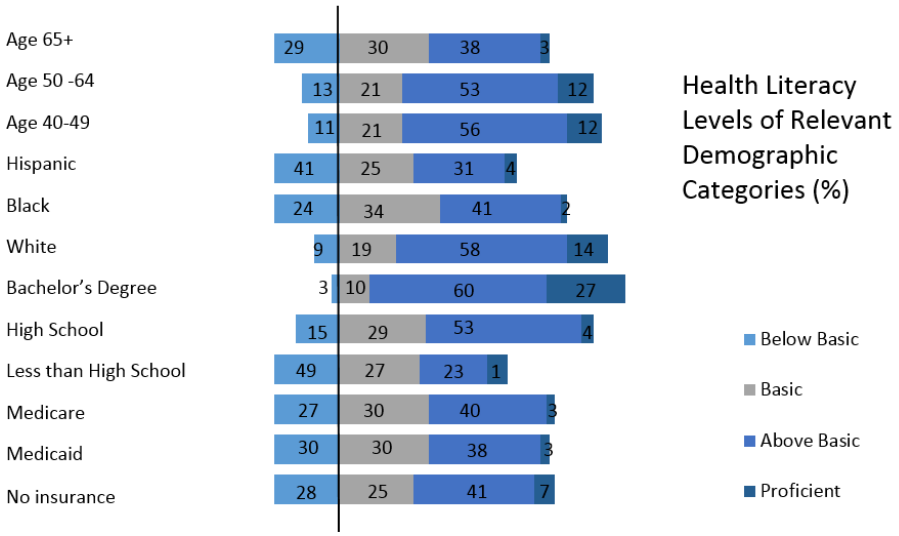
This white paper reports the process of choosing the assessment tool, the research methods, statistical analysis, and results for each of the five areas. Specific actions, based on best practices, are illustrated.

The research methods and results will be reported at the upcoming annual health literacy event, the "Health Literacy Summit," hosted by UTMC in June 2017.

Introduction

Health Literacy is defined as "the degree to which individuals have the capacity to obtain, process, and understand basic health information services needed to make appropriate health decisions."[1] Anyone can have low health literacy, including individuals with good literacy skills, but it is more predominant in the elderly and patients with less education.[2] For demographic categories relevant to the University of Tennessee Medical Center (UTMC) patients, the percent of patients with "*Below Basic*" and "*Basic*" health literacy is high (Figure 1).[3]

Figure 1



Patient outcomes research revealed that patients with low health literacy have increased readmission rates, frequently return to the emergency department for the same conditions, are less able to manage chronic conditions, and are less likely to get screening[4-6] (Figure 2). Low health literate patients arrive in

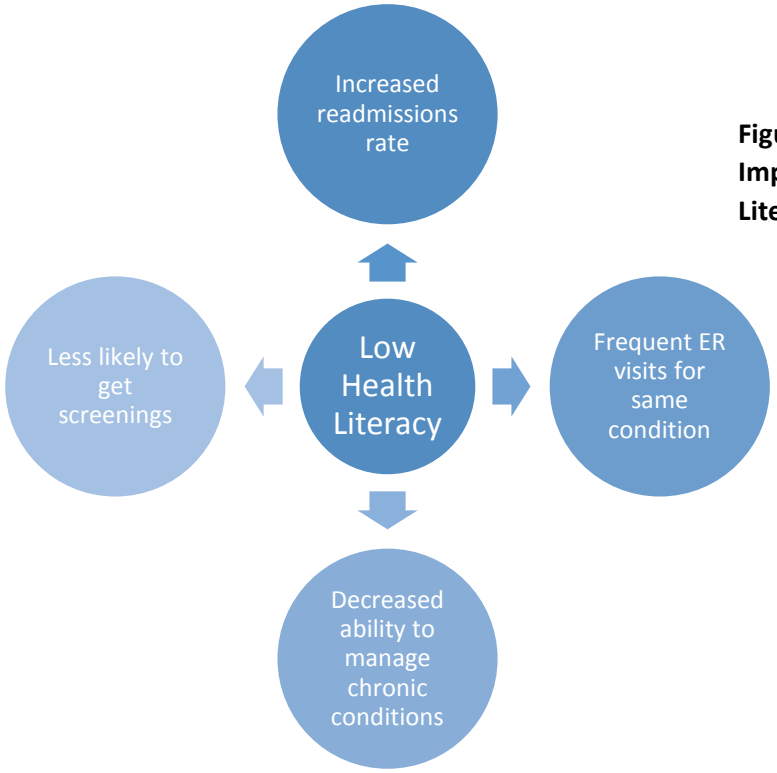


Figure 2 – Shows The Impact of Low Health Literacy.

the health care setting with more advanced stages of disease than health literacy proficient patients. These issues combined result in poor health and higher health care costs. It is estimated that the low health literate populations cost the United States economy between $106 billion to $238 billion annually.[7]

The 2010 National Action Plan to Improve Health Literacy recognized the health literacy problem in America and was the first to focus on systematic issues rather than the shortcoming of the patients.[8] The National Action Plan put forth seven goals to restructure how health education is conducted and how health information is disseminated. Goal 2 calls the health care organization to "Promote changes in the health care delivery system that improve health information, communication, informed decision making, and access to health services."

The Institute of Medicine's (IOM) 2012 Report[9], "The Ten Attributes of Health Literate Health Care Organizations," was a timely addition to the literature, creating a ruler by which organizations could measure whether they made it "easier for people to navigate, understand, and use information and services to take care of their health." The report addresses and defines a wide range of leadership activities, strategic planning, work force development, changes in communication practices, and integration of health literacy sensitive services, all of which exist within a complex health care setting (Appendix 1). The description of these attributes include examples of action that can be taken by organizations who are striving to become health literate. The IOM concludes, "if health care organizations adopt most of the 10 attributes, even in a modest way, they will be more responsive to individual's needs, and especially those with limited health literacy."[9]

Large health care organizations, such as academic medical centers, cannot make organizational changes, such as those described in the Ten Attributes, without first understanding what they are changing and how the outcome of each change can be measured. The Institutes for Healthcare Improvement's (IHI) Model for Improvement states that "measurement is a critical part of testing and implementing changes."[10] The model's four part process of "Plan, Do, Study, Act" is based on the ability to measure a current state, act, and measure outcomes in a rapid, short term process. The University of Tennessee Medical Center (UTMC) is among the many academic medical centers that utilize the IHI model as a part of the performance improvement process.

As part of performance improvement, UTMC formed a task force to implement a health literacy initiative that would result in a basis for promoting changes. Following the IHI Model for Improvement, the first step of the task force was to measure the health literacy environment at UTMC through collecting data using established research methods. Five distinct areas of the health literacy environment at UTMC were the focus of the research project: navigation, print communications, oral exchange, technology, and policies/protocols.

This paper reports the process of choosing the assessment tool, the research methods, statistical analysis, and results for each of the five areas, as well as best practices for improvement.

Assessment

There are a number of assessment tools available which were developed to assess some aspect of Organizational Health Literacy (OHL). All of the tools fall into the categories of surveys and checklists, and although they are helpful and easy to apply, none have been truly validated as research tools.[11] Authors of the tools include government and private institutions, both in the United States and internationally. The target respondent for these measures is either the organization, individual providers, or patients.[11]

The criteria for choosing an assessment tool to apply to UTMC's setting included the following: that it be based in the United States health care system, designed for organization respondents, used in other health care organizations, and assessed a maximum number of health literacy attributes, as defined by the Ten Attributes.

In the IOM commissioned white paper "Measures to Assess a Health-Literate Organization," Kripalani et al. outlined the measures available and identified the setting, intended respondents, and research methodology as well as which of the Ten Attributes were measured by each[11]. They further identified examples of organizations that had previously used each measure. Based on this information, the Health Literacy Environment of Hospitals and Health Centers (HLEHH) was chosen for the UTMC research project.

The HLEHH, created by Rudd and Anderson, offered a set of tools to measure five aspects of the health care organization that impact patients with low health literacy.[12] The document is comprised of five categories: Print Communication, Oral Communication, Navigation, Policies and Protocol, and Technology (See Appendix 2). Each category contained background information for the researcher followed by a series of questions. The questions were answered by a ranking of 1, 2, or 3. A rating of 1 represented "this is something that is not done." A rating of 2 represented "this is done, but needs some improvement." Lastly, a rating of 3 represented "this is something that is done well."

The total number of points through this ranking system were then summed to give an aggregate score for that particular category. Rudd and Anderson assigned the aggregate scores into three separate, pre-defined ranges consisting of "begin a focused initiative to eliminate literacy-related barriers," "augment efforts to eliminate literacy-related barriers," and "continue to monitor and eliminate literacy-related barriers."[12] The HLEHH is not meant for comparison purposes between health care organizations; instead, the tool measures aspects of organizational health literacy (OHL) of one organization.

In addition to using the HLEHH, researchers utilized other methods for assessing the printed patient education material. SMOG, PEMAT, and Flesch-Kincaid assessment methods were used and will be described in the Print Communication section of this document.

Print Communication

Introduction

Goal 2 of the National Action Plan to Improve Health Literacy addresses the importance of print communication by emphasizing that there needs to be improvements in the health information delivered to patients in this format. The average American reads at the eighth to ninth grade level, while one out of five read at the fifth grade level.[13] Therefore, research recommends that patient education materials not be written higher than the sixth- to eighth-grade level.[14] However, "much of the information distributed to patients is written at levels above most patients' literacy skills."[15] The following tools were used to assess print patient education material distributed at UTMC.

There are numerous readability formulas to evaluate grade level of patient education. SMOG (Simple Measure of Gobbledygook), developed by G. Harry McLaughlin in 1969, is the most used and most validated readability tool.[16] This readability formula allows the grader to determine the grade level of the patient education document through evaluating by hand. According to research, SMOG has a higher predictive comprehension level than other assessments.[17] Furthermore, "SMOG predict[s] the reading ability require[d] to correctly answer 90-100% of the questions on a reading test."[18] Another tool used to assess the grade level is the Flesch-Kincaid Grade Level tool. This is often used because it can be done easily through Microsoft Word; however, there are limitations to this computer assisted method. For example, research conveys that grade levels can range from two to three grade levels lower than a document calculated by hand.[19]

Although grade level plays an important part in patient education, appearance is also essential. Appearance includes: font type and size, headings, bullets, white space, and visuals. Visuals enhance patient education materials and support understanding. However, research advises using only visuals that are effective and acceptable with the intended audience.[20]

The Patient Education Materials Assessment Tool (PEMAT) allows authors to assess the understandability and actionability of print materials. Created by Sarah Shoemaker, Michael Wolf, and Cindy Brach, the assessment tool is available through the Agency for Healthcare Research and Quality (AHRQ). This document is "designed as a guide to help determine whether patients will be able to understand and act on the information."[21]

The HLEHH assesses the overall print communication climate of UTMC. Print communication proceeds beyond assessing for grade level and readability. Other factors influence how a patient engages with and uses the material for health decisions. The HLEHH delineates the complexity with four different sections highlighting areas of influence including: writing style; organization and design; type style, size of print, and contrast with paper; photographs, illustrations, symbols, and diversity.

Methods

Researchers downloaded the 150 most distributed patient education documents from the hospital's system for review and assigned each document an identification number for tracking and data entry. The 150 pieces of patient education included both materials from ExitCare as well as custom materials, which were created by staff at UTMC. Patient education material omitted included those that were no longer available through ExitCare and those that were only charts or images with no text content. Each document was assessed by three reviewers using SMOG, PEMAT and the Print Communication Rating (PCR) of the HLEHH.

Six graduate nursing students, as well as two masters' degree students in public health and counseling were selected as reviewers to complete the print assessment. To successfully assess the documents, training included an overview of health literacy and principles of examining easy to read materials, which was based on the National Network of Libraries of Medicine's class "*Promoting Health Literacy Through Easy to Read Materials.*"[22] During training, reviewers practiced applying the tools using documents that were omitted from the study.

In order to complete the Print Communication Rating form, reviewers first completed SMOG and PEMAT.

Reviewers returned materials to researchers for evaluation and recording. Researchers totaled the final scores for the PCR and entered the data into an Excel spreadsheet which was specifically designed for this project by the project statistician. After all the materials were returned, researchers used Microsoft Word to calculate the Flesch-Kincaid Grade Level on all the 150 print documents.

Frequency statistics were run on categorical variables. Skewness and kurtosis statistics were run on continuous variables to assess normality. Independent samples t-tests were used to compare groups on normally distributed continuous variables. Mann-Whitney U tests were used for non-normal outcomes. Chi-square tests were used to test associations between categorical predictors and outcomes. Means, medians, interquartile ranges, standard deviations, and 95% confidence intervals (95% CI) were reported and analyzed. Pearson's r correlation was used to test associations between continuous variables. Intraclass correlation coefficients (ICC) were used to establish inter-rater reliability for survey instrument ratings. All analyses were conducted using SPSS Version 21 (Armonk, NY: IBM Corp.) and statistical significance was assumed at an alpha value of .05.

Results Summary

The aggregate PCR score of 53.94 ranks in the top of three scoring ranges in this category.

Higher performing areas in print communication at UTMC included the formatting of patient education material. The formatting category addresses characteristics that impact the overall appearance and readability of the document including: font size and style, use of capital letters, contrast between the paper and words, use of headings, spacing, bulleted lists, and logical grouping of information.

Opportunities exist for improvement in patient education material including improving cultural sensitivity and employing elements to improve patient engagement with the information such as question and answer format, true-or-false, stories, or dialogues.

Improving reading grade level offers the most opportunity to improve patient education. The aggregate grade level of the patient education material was a 9.64 as measured by the most reliable and validated method. This does not match the reading grade level of many of the patients at UTMC or national recommendations.

Patient education material that was customized by UTMC had an aggregate grade level of 9.08, which is a slight improvement over vendor produced documents. Although the grade level is still too high, these results indicate that UTMC has made a positive impact on material in a purposeful way.

Results

Of the 150 documents analyzed, 91.3% (n = 137) were original, unedited documents from the Exit Care collection while 8.79% (n = 13) were custom documents created or edited by UTMC health care providers. All data was normally distributed as determined by skewness and kurtosis statistics.

There was excellent inter-rater reliability between graders for the SMOG (ICC = .95). SMOG grade level for the combined original and custom was grade 9.6 (95% CI 9.4 – 9.8). When analyzed separately, original documents scored at grade 9.6 (95% CI 9.4 – 9.9) while the custom documents scored slightly lower at grade 9.1 (95% CI 8.2 – 9.9); however, the difference was not statistically significant (p = 0.14). Using Flesch-Kinkaid, researchers found the mean grade level for all 150 documents was 6.5. See Figure 3 for distribution of the reading grade level of UTMC patient education material.

The PCR score ranges from 0-72 with higher being better. There was good inter-rater reliability for the PCR between graders (ICC = .67). The mean PCR score for all 150 documents was 53.9 (95% CI 53.0 – 54.9). When comparing original documents to custom, there was a significant difference (p = 0.02) with a lower score of 50.2 (95% CI 47.6 – 52.8) for custom versus 54.3 (95% CI 53.3 – 55.3) for original documents.

The researchers evaluated the individual means for each question on the PCR to determine more granular results (See Table 1). The section descriptions are below:

A – Writing Style

B – Organization and Design

C – Type style, size of print, and contrast with paper

D – Photographs, illustrations, symbols, and diversity

To assess the association between SMOG determined reading grade level and PCR score, researchers ran Pearson Correlation test and found a statistically significant negative correlation between the SMOG and the PCR (r = -.57, p < .001.). This type of correlation was expected, as reading grade level decreases, the PCR increases.

Due to extremely low inter-rater reliability, researchers were unable to run statistics on the PEMAT scores. There was poor inter-rater reliability for the Understandability PEMAT (ICC = .25). There was very poor inter-rater reliability for the Actionability PEMAT (ICC = .06). No further results are being reported in the PEMAT.

Figure 3

Reading Grade Level of UTMC Patient Education Material and Reading Capacity of Patients (n=150)

Reading Capacity Of Patients
Average American reads at the 8th-9th grade
1 in 5 Americans read at 5th grade level
15% lacking basic prose literacy skills in UTMC 21 county region

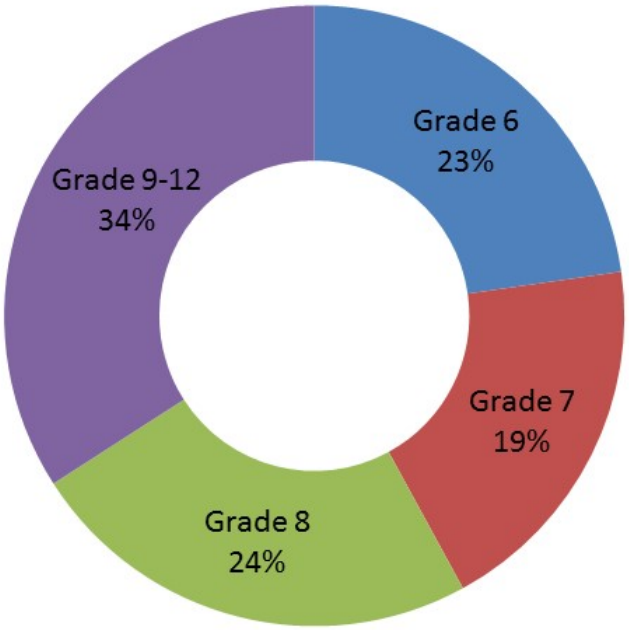


Table 1 – PCR Individual Question Means (n=150)			
Question	Section	Mean	Standard Deviation
The text avoids splitting words across two lines.	C	2.97	.14
The font size is 12-point font or greater.	C	2.96	.21
There is contrast between the printed text and the paper.	C	2.88	.21
The print does not overlay pictures or designs.	C	2.86	.38
The text uses CAPITAL letters only when needed grammatically.	C	2.82	.29
The material avoids using cartoons, humor, and caricature, which may be understood as offensive.	D	2.74	.35
The material uses headings, subheadings, or other devices to signal what is coming next.	B	2.72	.35
The labels for sections, headings, and subheadings are clear.	B	2.64	.35
The information is grouped into meaningful sections.	A	2.62	.38
The material uses bullets effectively (size, shape, spacing, and color).	B	2.56	.36
The graphic design uses devices such as contrast, bullets, and indentation to signal the main points and make the text easy to skim.	B	2.52	.38
The material emphasized and summarized the main points.	A	2.36	.37
The material is written in the active voice and in a conversational style.	A	2.35	.36
The material looks uncluttered with generous margins and plenty of white space.	B	2.24	.52
The words and sentences are generally short, simple, and direct.	A	2.07	.50
If medical terms (such as dosage or monitoring) are used, they are clearly explained with helpful examples.	A	2.04	.38
Translations use plain, everyday words, and short sentences.	A	1.94	.49
The material uses photos, illustrations, symbols, patterns, and other visuals to reinforce key messages.	D	1.76	.71
The people and activities shown in photos or illustrations are contemporary.	D	1.64	.65
The material shows awareness of and respect for diversity, and uses culturally appropriate words and examples.	D	1.56	.57
Explanatory illustrations, diagrams, tables, charts, and graphs are clearly labeled and placed near the text that introduces them.	B	1.54	.61
The reading grade level is that of the average U.S. adult (8th grade or below).	A	1.41	.70
The people and activities shown in photos or illustrations are representative (in their demographics, physical appearance, behavior, and cultural elements) of the intended audience of the materials.	D	1.39	.54
The material uses devices to engage and involve the reader, such as question and answer format, true-or-false, stories, or dialogues.	A	1.27	.30

Discussion

UTMC scored well in regards to the formatting of print patient education material. The font was typically 12 points or larger with contrast between words and paper, which according to the CDC is important because low contrast font and "anything less than 12 points can be too small to read for many audiences."[20] The style of font, use of capitalization, and amount of white space of the patient education material also met the guidelines. The CDC recommends using serif fonts since they are easier to read while not using fancy lettering or all caps when writing since script lettering and all caps can be hard to read.[20] Using an appropriate amount of spacing around text and pictures ensures that the text does not overwhelm the patient.

UTMC also did well in the use of headings, logical grouping of events, and bullets. The CDC recommends that messages be organized in order for patients to easily act on them, as well as recall them.[20] Ideas should be presented in the order they will be used or in a logical sequence of events.[20] Use of headings and sub-headings are recommended to "chunk" text to help the patient better understand the information. In addition, bullets help break up the text, which makes it easier for the patient to read.[20] (Figure 4)

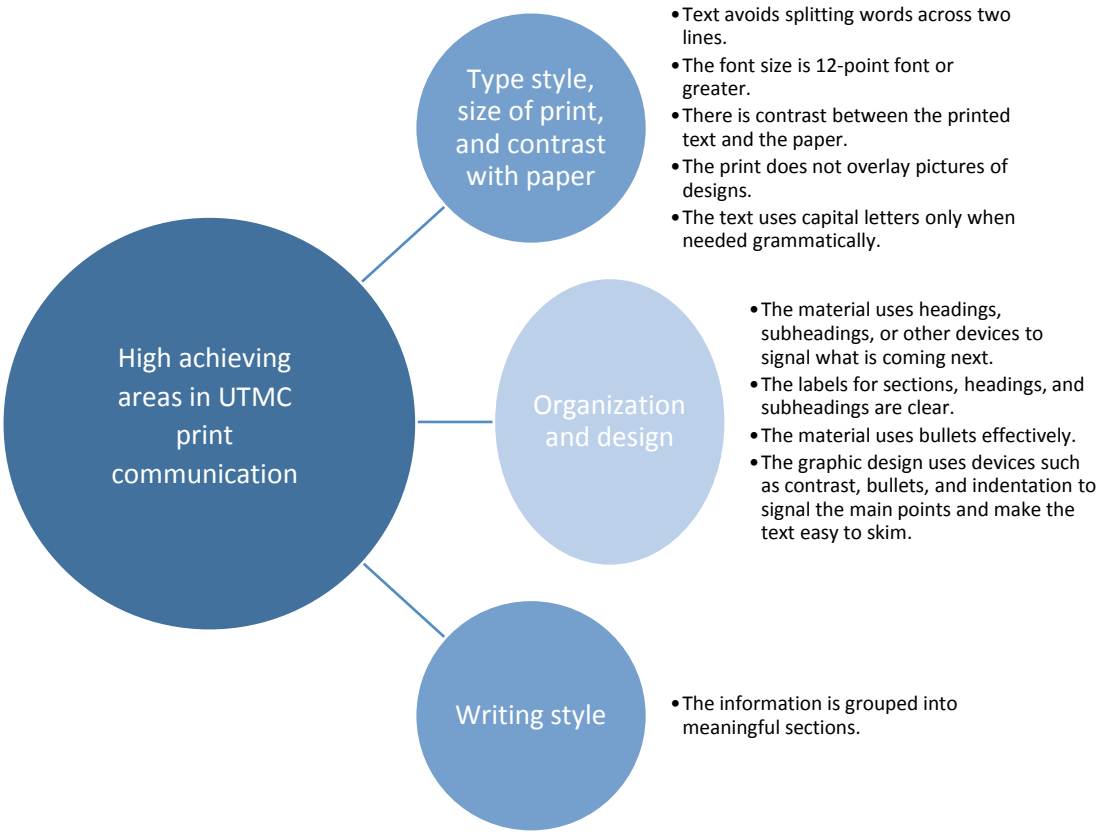


Figure 4

Opportunities for the improvement of patient education material at UTMC include improving cultural sensitivity and increasing the use of visuals to better engage patients. Best practices for cultural sensitivity include not only using culturally appropriate terms, but targeting the education message to the groups of people the education is trying to reach.[20] According to the CDC, "culture affects how people understand and respond to health messages."[20] Additionally, research shows that

> A group's culture influences the knowledge, attitudes, and practices of its members, which in turn affects the way group members respond to healthcare information. Because individuals respond to healthcare information in terms of beliefs and values that shape identity and rules of

behavior associated with group survival and welfare, healthcare information that does not coincide with an individual's beliefs or practices can be interpreted as insensitive and maladaptive.[23]

In order to determine if patient education is culturally sensitive to the organization's patient population, an advisory committee can be created and focus group reviews can be performed. In one model, Guidry and Walker created an advisory committee of health professionals, academics, and laypersons to evaluate the cultural sensitivity of patient education targeting African Americans.[23] In addition, focus groups were conducted in order for the patient education to be evaluated by the primary users.

Opportunities also exist to improve patient education material by incorporating visuals and increasing interactivity. Improving visuals can enhance patient education materials and help make it easier to read and better engage the patient. However, it is important to use visuals that are effective and acceptable with the intended audience.[20] The visuals should be used to explain or emphasize the message and not take away from the purpose of the education.[20] Patient education should be interactive because patients will be more likely to remember the information and act upon it. Best practices to improve interactivity include: asking questions, asking the audience to solve a problem, and including word/image association opportunities.[20]

An opportunity exists to improve the grade level of UTMC's patient education. According the IOM, most states require patient education to be written at the sixth-grade level.[2] In addition, The Joint Commission recommends a sixth grade level.[24] In Tennessee, 13% of the population lack basic prose literacy skills while in the 21 county region served by UTMC, 15.1% of the population lack basic prose literacy skills.[25] See Figure 5 for percent population that lack basic prose literacy by county. Therefore, it is considered a best practice that patient education is written at a sixth-grade level, or below. UTMC's patient education is above the national average reading level when evaluated by hand using SMOG. It should be noted that the vendor (ExitCare) that provides UTMC patient education material states that the reading grade level meets the requirement of being sixth grade. However, the vendor (K. Leonard, personal correspondence, Jan. 2017) uses a computerized method that is less accurate than SMOG, as described below.

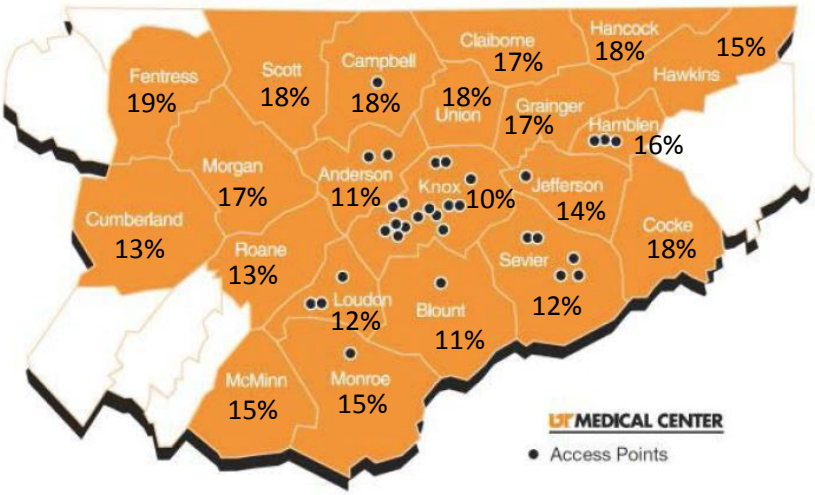


Figure 5 – % population who lack basic prose literacy by county (NCES, 2003)

The task force selected SMOG to evaluate the grade level of UTMC's patient education materials, rather than using Microsoft Word's Flesch-Kinkaid for a number of reasons. First, the HLEHH recommends

using SMOG and states that SMOG is useful for doing quick assessments and predicts 100% comprehension.[12] Second, the U.S. Department of Health and Human Services, Centers for Medicare & Medicaid Services recommends scoring materials by hand using SMOG in their Toolkit for Making Written Material Clear and Effective, Part 7. The toolkit states that scoring by hand is more reliable than using the computerized scoring.[26]

Past research has looked closely at computerized methods of determining grade level and documented that these methods lead to inaccurate measurement. In fact, it has been shown that grade levels generated with the computerized method range two to three grade levels lower than a document that was calculated by hand.[19] Friedman determined that "computer software programs recognize each period as the end of a sentence, abbreviations, numbers with decimals, and bullets may lower the RGL [reading grade level] and underestimate text difficulty."[16] Additionally, research revealed that embedded punctuation can often mislead the computer when it counts the number of sentences. The computer is also misled when it comes to titles, headings, and bulleted lists.[26] Computerized scoring is less credible because of these problems of measurement and unreliability.[26]

In addition to the general problems described above, the UTMC task force chose not to use the Flesch-Kincaid Grade Level formula because according to research, it only goes to the twelfth grade in Word's Readability Statistics.[17] Since some documents may exceed twelfth grade level, using the Flesch-Kincaid Grade Level formula in Word's Readability Statistics may not capture the true grade level. To see the comparison of Flesch-Kincaid to SMOG grade levels see Appendix 3.

Specific action based on best practices that can be taken by UTMC to improve print patient education material, including:

- Change vendors to one that can provide patient education that is written below the sixth-grade level.
- Provide instruction to team members on how to write easy-to-read patient education when they are creating or customizing material to ensure that the resulting documents meet guidelines.
- Create an advisory group of health professionals, academics, and laypersons to evaluate the cultural sensitivity of patient education targeting
- Assemble a panel of laypeople to test a sample of patient education materials for readability.

Such actions would ensure the medical center's population will understand and be able to act on the patient education material.

Oral Communication

Introduction

One influential factor on health outcomes is oral communication. During each visit, a patient encounters many individuals: front desk workers, nurses, doctors, etc. With many of these interactions, verbal exchange occurs, some of which may not convey the intended purpose. Effective communication is fundamental in benefiting the welfare of patients.[27] Beyond the individual's capacity for literacy and understanding, the health care organization can implement strategies to reduce oral communication health literacy barriers. While Harrington and Valerio delineate the complexity of "verbal exchange," they highlight not only the attributes of the patient, but also the characteristics of the provider that influence the transmission of information. One characteristic is the provider's "ability to communicate clearly using plain language and interpersonal skills."[28] To assess patient understanding, providers use the teach-back method. This method allows for patients to explain the necessary steps once they leave the office.[29] Other influential factors include: hastiness of appointments, lack of supporting components, and lack of affirmation that the patient understood.[30]

Oral communication extends beyond the semantics and syntax of speech to incorporate the surrounding health care context. Trust has been shown to decrease when patients do not perceive a responsive and inviting environment.[27] Research suggests that "higher medical mistrust" is associated with "not feel[ing] welcomed by providers." Consequently, patients may grade their providers' communication style as less interpersonal when they do not fell welcomed.[27]

In patients with low literacy, elements of communication such as being greeted and welcomed are especially important, as research has shown there is a decrease in trust in this population as compared to higher health literacy levels patients.[27] Additionally, research found an increase in patient understanding and better health decisions following favorable interactions in the medical office.[31]

To account for the complexity of oral communication, researchers implemented the HLEHH assessment tools, "Patient Satisfaction Survey Interview Form" (PSSIF) and "Oral Exchange Rating Form" (OERF). The PSSIF consisted of twelve questions encompassing level of greeting, completion of forms, explanation of terms, patient questions, and overall experience. This tool combined with observations of medical staff interactions influenced the oral exchange rating form scores. The OERF consists of eight questions highlighting the overall environment of oral communication.

Methods

The research team gained approval from the study locations (Emergency Department, University Cardiology, and University Internal Medicine) to observe and interview patients. Security was informed of the process to avoid complications with the presence of a research team in those settings. Researchers selected study participants by asking all patients exiting in each of the three areas to verbally consent to an interview; those that agreed were included in the study.

The oral research team consisted of three people: Observer, Mediator, and Interviewer. The Observer and Mediator were always badged employees of UTMC, while the Interview team consisted of six different graduate level nursing students. Training for Interviewers included mock interviews and a standardized script to ensure that the consenting procedure and interviews occurred in a uniform fashion.

The assessment tools included the OERF, PSSIF, and observations. Four additional items were recorded to assist in analyzing the results: date, time, location, and observed gender.

Research Team Roles

The Observer sat or stood close enough to the intake desk to hear interactions, but not close enough to be intrusive or noticed by the patients. To complete the OERF, the observer wrote verbatim interactions between patients and staff.

The Mediator observed the interactions between the Interviewer and the patient in order to ensure adherence with the script. Additionally, the Mediator recorded the number of patients asked to consent and the number that declined. While observing, the Mediator listened for verbal cues that the Interviewers needed assistance in communicating with the patient.

The Interviewers approached each patient and requested verbal consent. Once the participant consented, the Interviewer asked each of the questions on the PSSIF while recording the comments verbatim.

Once the interviews were completed, the Observer and Mediator reviewed the individual PSSIFs with the observations to complete the OERF. Researchers developed a scoring rubric for each question to assist in consistently translating observations to a score of 1, 2, or 3 as per the HLEHH (Appendix 4). Each of the interviews received an oral exchange rating score. Data was entered into an Excel spreadsheet, which was specifically designed for the project by the project statistician. Frequency statistics, descriptive statistics, and chi-square tests were used to analyze the data.

Results Summary

The aggregate oral communication rating score for the three study locations was 16.91, which ranks in the middle of three scoring ranges for this category. This indicates that UTMC should "augment efforts to eliminate literacy-related barriers." There was no significant difference in the three study locations.

Highest performing areas in oral communication included UTMC staff using plain everyday words, asking patients if they had any questions, and the availability of translation services. Most patients responded that they were greeted, felt welcome, and were treated with respect and dignity in all three study locations. Regarding interactions with providers, almost all patients who asked questions felt the questions were well received.

Opportunities exist for improvement of oral communication including coaching UTMC employees to use the recommended method of establishing comprehension in patients by asking, "Am I being clear?" rather than, "Do you understand?" to explain medical terms, to offer everyone help regardless of appearance, and specifically to offer help in filling out forms. Another opportunity for improvement was increasing multilingual staff available.

Results

Out of 401 total patients asked to consent to be interviewed, 298 patients agreed. This sample was comprised of 58.4% Females (n = 174) and 41.6% males (n = 124). The patients were visiting one of three study locations in the following proportion: Cardiology, 34.9% (n = 104), Internal Medicine, 33.6% (n = 100), Emergency Department, 31.5% (n = 94). See Table 2 for individual question mean scores on the PSSIF.

The OERF score ranges from 0 to 24, with higher being better. The overall mean rating score was 16.9 (SD = 1.5) with no significant difference between the study locations (p = .97). See Table 3 for ranking of OERF questions by percent.

There was no significant difference between study locations for patients who said yes to questions about being greeted (96%, n = 285), feeling of welcome (99%, n = 285), getting explanation of medical terms (84%, n = 247), feeling as if their questions were well received (99.1%, n = 221), or being treated with respect and dignity (99.3% n = 295). Regarding the explanation of medical terms, through word analysis of comments offered by patients, researchers found that 28 patients gave a verbal response of why they did not get an explanation of medical terminology; the predominant themes were: “didn’t need it,” “understood,” and “work [in this field].”

A significant difference (p =.002) was found in the Emergency Department where patients were more likely to have a name and number for follow up questions than did those at University Internal Medicine (79.3% vs. 57.6%), and patients were much more likely to fill out forms in University Cardiology (p < .001) than University Internal Medicine (78.6% vs. 14%). Regarding having a name and number for follow up, 25 patients at University Internal Medicine responded they already knew who to contact with the predominant themes being: “know who to call” and “been coming here for years.” Regarding completion of forms, of the total 298 patients only 37.7% (n = 112) of patients were asked to fill out a form and of those patients only 24.8% (n = 74) were offered help. In word analysis of comments offered by patients, 30 of the 84 patients who were not offered help show a predominate theme of: “didn’t need help.”

Items that were ranked as a 3 (highest ranking) on the OERF include: staff uses sentences that are short, direct, and in plain everyday words (79.5%); staff asks patients if they have any questions (7.1%); and having translation services available (100%). Items that were ranked as a 2 (middle ranking) on the OERF included staff checking in with patients by asking, “Am I being clear,” rather than, “Do you understand” (85.2%).

University Internal Medicine and the Emergency Department were more likely to have staff offer everyone help regardless of appearance (due to staff being less likely to offer help filling out forms in University Cardiology). The Emergency Department was significantly more likely to have multilingual staff available than University Cardiology and University Internal Medicine (p < .001).

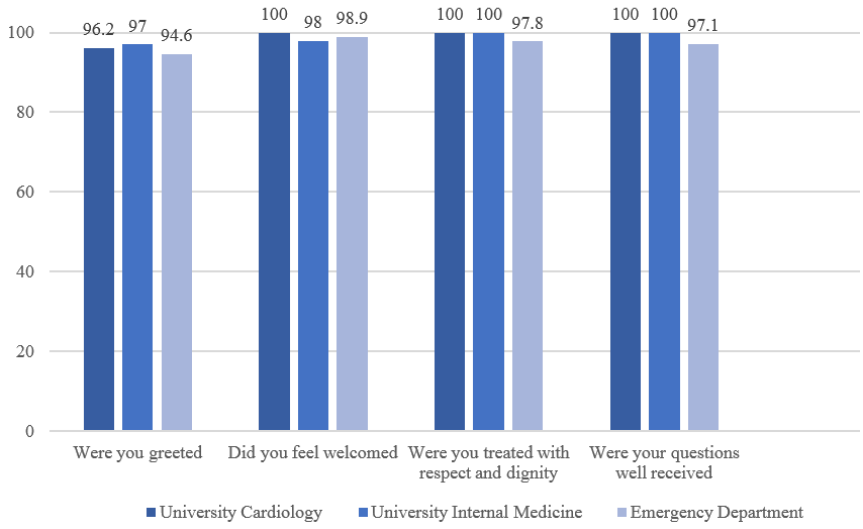
Table 2– % of Yes/No Answers on the PSSIF by Location								
Question	Total 298		University Cardiology n = 100		University Internal Medicine n=104		Emergency Department n=94	
	Yes	No	Yes	No	Yes	No	Yes	No
Were you greeted when you entered this area?	96	4	96.2	3.8	97	3	94.6	5.4
Did you feel welcomed?	99	1	100	0	98	2	98.9	1.1
Were you asked to fill out a form?	37.7	62.3	78.6	21.4	14	86	18.1	81.9
If you were asked to fill out a form, did a staff member or volunteer offer to help you with it?	24.8	74.3	19.8	80.2	28.6	71.4	47.1	52.9
If staff used medical or technical terms, did they explain them?	83.7	15.9	83.5	16.5	80.4	19.6	88.3	11.7
Did you ask questions during your visit today?	75.2	24.8	77.9	22.1	74	26	73.4	26.6
Were your questions well received?	99.1	0.9	100	0	100	0	97.1	2.9
Were you given the name of a person or place to call if you have any follow up questions?	67.7	32.3	67	33	57.6	42.4	79.3	20.7
Were you treated with respect and dignity?	99.3	0.7	100	0	100	0	97.8	2.2

Table 3 – Ranking of OERF Questions by Percent												
Question	Total 298			University Cardiology n=100			University Internal Medicine n=104			Emergency Department n=94		
	1	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**
Staff offers everyone help regardless of appearance.	3	34.6	62.4	2.9	61.5	35.6	4	18	78	2.1	22.3	75.5
Multilingual staff are available to help people.	89.6	7.4	3	95.2	0	7.8	99	1	0	73.4	22.3	4.3
Staff uses sentences that are short, direct, and use plain everyday words.	8.1	12.4	79.5	5.8	10.6	83.7	11	10	79	7.4	17	75.5
Staff adjusts the pace of their speech when they work with people for whom English is a second language.	4.4	94	1.7	1.9	95.2	2.9	0	100	0	11.7	86.2	2.1
Staff checks in with patients by asking, “Am I being clear?” rather than, “Do you understand?”	6.4	85.2	8.4	4.8	82.7	12.5	6	88	6	8.5	85.1	6.4
Staff asks patients if they have any questions.	23.8	5	71.1	19.2	2.9	77.9	25	4	71	27.7	8.5	63.8
Staff uses audio and/or videotapes when such materials are available.	100	0	0	100	0	0	100	0	0	100	0	0
Translation services are available or can be called in with short notice.	0	0	100	0	0	100	0	0	100	0	0	100

Discussion

UTMC oral communication scored favorably, especially demonstrating that patients felt welcomed and that their questions were well received. This indicates the positive nature of the patient-health care professional interaction. According to Rubin, “Oral communication about health information is arguably at least as important as written communication,” therefore, “improving the quality and delivery of discharge instructions continues to be an area of great importance.”[32] In order for patients to better understand their health information and make health decisions, oral communication with the health care team needs to be effective. Oral communication extends beyond the words exchanged; research suggests that the nature of interactions can impact health decisions.[31] Additionally, research has shown that increasing trust between the patient and provider improves communication.[27] Specific actions that can increase trust between the patient and provider include patients feeling welcomed and that their questions are well received.[27] (Figure 6)

Fig. 6: Patient- Provider Relationship (% Yes)



UTMC scored well in using plain everyday words while interacting with patients. Best practices, as suggested by research, indicates that providers should “avoid jargon” and “offer explanations.”[33] Avoiding jargon places the provider on a similar linguistic field and leaves less room for errors in communication. Reducing the use of technical terms ensures that low literacy patients are able to comprehend health information.

“Patient engagement through question asking can enhance satisfaction and recall of information imparted during an office visit,” which improves opportunities for understanding.[31] During UTMC research interviews, the majority of patients said “yes” when inquired if they “asked questions during their visit,” which would be indicative of their level of engagement. While the majority of patients interviewed were engaged in the health care experience and asked questions, there is opportunity to increase that percent by incorporating specific communication techniques.

One communication technique used to engage and “assess patients’ understanding of their illness and its treatment” is called the teach-back method.[29] The teach-back method coaches health care providers to eliminate asking “do you understand” and instead determines comprehension through dialog and

listening to a patient's recollection and explanation. Research suggests health care providers should implement this form of patient engagement in order to determine what information their patients understand and can therefore act on once they leave the office.[29] Hospital wide education at UTMC on this communication method is recommended to institutionalize the practice and improve oral communication with patients.

Two other areas were identified for improvement: offering assistance to all patients in completing medical forms and expansion of multilingual staff. Assisting patients with low health literacy with medical forms can decrease the likelihood of misunderstanding and inaccurate medical histories. Since it is not always easy to tell the literacy level of a patient by appearance, the best practice is to offer assistance to all patients. Not all patients who enter the medical center speak English as a primary language. Understanding there is a wide variety of languages that enter the medical center and therefore hiring staff who speak different languages would best meet the needs of the entire patient population.

The specific actions based on best practices that UTMC could take to improve oral communication include:

- Provide hospital wide instruction on the teach-back communication method.
- Offer assistance in completing forms to all patients.
- Increase the number of staff who speak different languages.

Navigation

Introduction

Before seeking medical assistance, individuals must navigate the medical center to locate the appropriate services. Navigation is a complex task including the interconnection of senses and movement through a health care environment.[34] Additionally, the surrounding health care environment influences successful navigation,[35] which also includes landmarks, distinct features, and clarifying components.[36] Understanding the complexity of navigation, health care organizations need consistent symbols to assist with ease of navigating.[34] These elements are especially important since it has been shown that individuals seeking medical assistance are "at a high level of stress and anxiety."[35] Knowing individuals who enter the medical center may not have clear minds for navigation, easy to follow navigation tools, such as signs with plain language, color coded floors, etc., should be implemented.

To assess the current state of UTMC's navigation elements, researchers implemented the HLEHH tools, "Telephone Assessment Form," "Walking Interview Guide," and "Navigation Rating Form."

Methods

Navigation elements of the medical center were evaluated using the three HLEHH assessment tools and seven pairs of observer-navigators. Researchers edited the Navigation Rating Form to update it to reflect the study locations (Appendix 5). Researchers selected three study locations to assign to Navigators (High Risk Obstetrics, Emergency Department, and University Internal Medicine). Navigators were recruited from several University of Tennessee education programs. Criteria for participating as a Navigator was that the person had never visited UTMC. Observers were members of the research team.

Prior to arrival at UTMC, Navigators called the UTMC main number to ask for directions to the "H" garage while filling out the provided Telephone Assessment Form. After the completion of this task, Navigators arrived at a specified time and day to meet the Observer at the main entrance. Once the Navigator arrived, the Observer followed the Walking Interview Guide to record the description of the Navigator's experience locating UTMC, parking, and identifying the main entrance.

Once the Observer and Navigators completed the first set of questions, Navigators were instructed to find one of the three study locations within the hospital while speaking aloud to describe the underlying reasons for their actions. To capture the experience verbatim, the Observer used a recorder.

Once the navigation portion was completed, the Navigator answered the final reflection questions from the Walking Interview Guide and completed the Navigation Rating Form to communicate their entire experience.

Data was totaled to determine the overall navigation rating score and entered into an Excel spreadsheet, which was specifically designed for this project by the project statistician. Verbal recorded comments and text based answers from the interviews were transcribed for analysis. Descriptive statistics like mean, median, standard deviation, and interquartile range were used to analyze the data.

Results Summary

The aggregate Navigation rating score of 64.71 ranks in the top of three scoring ranges in this category indicating that UTMC should "continue to monitor and eliminate literacy-related barriers."

Higher performing areas at UTMC include a staffed information desk with visible signage in the lobby and at all three study locations. The staff and volunteers wore identification badges and uniforms. Overhead signs used large, clearly visible lettering.

Opportunities exist for improvement including map placement, inclusion of a map key, and an easily identified "you are here" indicator. Opportunities to improve signage include: increasing visibility of exterior signs from the street, having health care providers names clearly posted at each outpatient location, including other primary languages, using consistent symbols, and using plain everyday language.

Areas that offer the most opportunity for improvement include those that address multi-culturism, such as the availability of multilingual telephone menu options, multilingual staff at main entrance and welcome desk, and multilingual signage.

Results

Quantitative findings

There were 7 participants in the Navigator group who completed Telephone Assessment Form, Walking Interview Guide, and Navigation Rating tool. The Navigation Rating tool score ranges from 0 to 93, with higher being better. The overall navigation rating score was 64.7. See Table 4 for the mean scores of the individual questions. See Table 5 for the median scores of the individual questions. The section descriptions are below:

A – Telephone System

B – Entrance

C – Lobby

D – Staff Assistance

E – Hallways: Navigation Ease

F – Service and Specialty Areas

Qualitative findings

Using Rudd and Anderson's HLEHH tool "Walking Interview Guide," researchers prompted responses through a series of open-ended, qualitative questions before completing the quantitative rating scales.

Based on the navigator's responses to the structured interview guide questions, four themes were developed to better explain their experiences navigating UTMC: "Main Entry," "Lobby – Printed Words," "Lobby – Visuals and Maps," and "Lobby – Assistance." "Main Entry" encompasses all exterior areas of UTMC, including parking garages, street signage, and outdoor directional signage. "Lobby- Printed Words" references all text elements that are included in interior hospital signage. "Lobby – Visual and Maps" references all non-text elements of hospital signage, including photos,

maps, and graphics. Lastly, “Lobby – Assistance” references all areas of assistance that are available at UTMC.

Main Entry

Under the main entry theme, two inductive codes were generated: “confusion” and “frustration.” The navigators experienced confusion when attempting to find the correct parking garage (H) they were assigned to locate. Two navigators (28.6%) stated they never saw signs for an H garage. One recalled, “The available signs were not great. I did not get great directions to the H garage when I called and there were no signs for H garage when you first arrived.” Two navigators (28.6%) did not attempt to find the H garage, but instead parked in an alternate garage on property due to “easy access.”

Navigators also expressed confusion while trying to locate UTMC’s main entrance. One stated, “I got lost trying to find the main entrance.” Three navigators (42.8%) recalled never seeing a sign for the main entry. Comments included: “[there was] no sign saying where to find the main entrance” and “The main entry is not clearly marked.”

Lastly, navigators expressed a sense of frustration with the direction and flow of traffic entering the hospital. One stated, “I felt flustered because of three ways you can go with five signs and [you] have to make a choice right then.” In regards to clarity of signs, a navigator stated frustration with the parking situation “because you have to go so quickly.”

Lobby- Printed Words

Two codes emerged under the theme “Lobby- Printed Words.” The first was “small fonts” and the other was “large volume of text.” Four of the seven navigators (57.1%) stated that the signage present in UTMC’s lobby used small type that made the signs hard to read, saying, “There is small font” and, “The font needs to be bigger.” Regarding the large volume of text, one navigator stated, “Signs were small and you had to read a lot. There were very long lists.” Another recommended that a visual representation of the hospital’s layout would serve patients better suggesting, “Signs are not the easiest to read. A mall map would be easier to read.”

Lobby – Visual and Maps

Within the theme “Lobby- Visuals and Maps,” three unique codes emerged with the data including: “better navigational signs,” “clearer maps,” and “inconsistency in signage.” Five of seven navigators (71.4%) made reference to the lack of directional signage and clarity of signage throughout UTMC. Regarding the need for better navigational signage, one navigator stated, “There were not clear directions with arrows,” and that there was “not a lot of directional print.” Another navigator noted, “the north, south, and east [directional layout] was not helpful.”

Along with a desire for better directional signage, the navigators requested that the existing maps be easier to read. One navigator stated that the “directory doesn’t have all places [listed].” Another stated, “[there were] no pictures for finding your way.” When searching for the Emergency Room, one navigator noted that there were “no signs saying emergency that way.” Another navigator recalled having to “search for emergency.”

Lastly, navigators noted that the existing signage at UTMC was inconsistent, and in some instances, incorrect. One navigator recalled “the directory [by the ER] was flipped.” Another navigator stated the “sign next to the information desk listed wrong information” and that “the map didn’t actually portray the layout.”

Lobby – Assistance

Under the theme of "Lobby- Assistance," two codes emerged: "accessibility" and "efficiency." Six of seven navigators (85.7%) noted that upon their arrival to UTMC, the information desk was fully staffed and available for questions. However, there was some concern regarding the efficiency of the information desk. One navigator noted that "there was a line" when she approached the desk. Another stated, "she [the information staff] didn't know where it was when I asked her, but she looked it up and helped me."

Table 4 – Navigation Rating Form Individual Question Means (*n* = 7)

Question	Section	Mean	Standard Deviation
The health care facility's name is clearly displayed on the outside of the building.	B	2.43	.78
The signs use plain, everyday words such as "walk in" rather than formal words such as "ambulatory care."	B	2.29	.76
Maps are posted at various locations around the facility.	E	2.29	.49
Consistent symbols/graphics are used on signs throughout the facility.	E	2.29	.95
The map includes a key.	C	2.14	.90
Words used for locations on signs throughout the facility remain consistent.	E	2.14	.90
Signs are written in English and in the primary languages of the populations being served.	E	2.14	.90
All entry signs are visible from street.	B	2.00	.82
There is a map in the lobby.	C	2.00	.82
The map shows the present location with a "you are here" and/or star or symbol.	C	2.00	1.00
The name of the clinic/service area is clearly posted.	F	2.00	.82
Staff or volunteers are available at or near the main entrance to help with visitors.	D	1.86	.69
Sign in procedures are clearly indicated.	F	1.86	.90
When phone call is answered there is an option to hear information in a language other than English.	A	1.57	.98
If there is an automated phone system, there is an option to repeat menu items.	A	1.57	.98
Handheld maps are available for people to take with them	C	1.00	.000

Table 5 – Navigation Rating Form Individual Question Medians (*n* = 7)			
Question	Section	Median	IQR
There is a welcome or information desk.	C	3.00	0
A sign indicated the welcome or information desk.	C	3.00	0
Information is offered with plain, everyday words.	A	3.00	0
Staff or volunteers are present at the welcome or information desk.	D	3.00	0
The front desk is visible upon entry to the location.	F	3.00	0
The front desk at the location is staffed.	F	3.00	0
Staff or volunteers wear identification such as a button, uniform, or nametag.	D	3.00	1
Overhead signs use large, clearly visible lettering.	E	3.00	1
Wall (eye level) signs use large, clearly visible lettering.	E	3.00	1
If there is an automated phone system there is an option to speak with an operator or help desk.	A	2.00	2
The map shows the present location with a "you are hear" and/or a star or symbol.	C	2.00	2
Multilingual staff or volunteers are available at or near the main entrance to help visitors.	D	1.00	0
Multilingual staff or volunteers are available at the welcome or information desk.	D	1.00	0
Multilingual signage is available at the location.	F	1.00	0
Color codes are used consistently on the walls or floors throughout the facility to mark paths to and from various sections of the facility.	E	1.00	1
The doctors' names were displayed at the location.	F	1.00	2

Discussion

As discussed previously, individuals navigating medical centers are more likely to be in a state of stress and panic, which increases navigation difficulty.[35] Additionally, "confusing signs can lead to increased stress, physical discomfort, and dissatisfaction with the health care system resulting in increased staff burden."[37]

According to literature, best practices surrounding navigation include "presenting relevant information in accordance with people's specific needs."[34] Achieving this concept requires medical centers to understand the multicultural and demographic aspects of their patient population in order to incorporate effective navigational cues. Yet, it may be an impossible task to incorporate all cultures in the patient population, so "signage [should] be designed to be as universally comprehensive as possible."[38]

The use of symbols and descriptive phrases to assist with navigation in medical centers is encouraged, but should be consistent throughout the facility.[33,34] Beyond consistency, signage and maps should be

easy to read; research denotes using a large font size and clear font type to assist those with visual impairments.[34,38]

Research suggests the high importance that patients place on staff members for assistance. Therefore, having specific staff training in regards to navigating the health care facility would empower staff to better assist the patients.[39,40] Systematically including information during new staff orientations on building lay-out and wayfinding tools has been recommended.[37,40]

Based on the quantitative and qualitative results, specific actions based on best practices that UTMC could take to improve navigation include:

- Include training on building layout and wayfinding in staff orientation.
- Providing multilingual telephone service for directions and questions.
- Providing clearer, larger external signage (parking garage and main entry).
- Including a directory in the lobby and maps or brochures denoting all floors, buildings, and practice locations.
- Improving directional signage to the Emergency Department.

Policies and Protocol

Introduction

Patient engagement has been defined as "actions individuals must take to obtain the greatest benefit from the health care services available to them."[41] Engaging patients in their own health care has been attributed with improving health outcomes.[4-6] Koh describes a "cycle of crisis care" in which the systematic failure to communicate effectively with patients results in declining condition of the patient and readmission.[42] A "Health Literate Care Model" focuses on systematic changes to address low health literacy patients and improve outcomes.[43] In this model, Koh reflects that "the entire health care organization needs to be structured to make interactions between health care teams and patients as productive as possible."[43] Suggested strategies include improved print and oral communication and education of all patients from the time the patient enters into the system to discharge and beyond. Other research also recommends changes in the way providers approach patient care; they must "recognize that a provider's responsibility no longer starts when patients walk in the door and it certainly doesn't end when they walk out."[44]

There is a broader recognition that the health care environment itself needs systematic revisions to reduce barriers.[8,9,12] Health care environmental factors that impact the ability of patients to fully engage in their health care experience include facility design, signage, technology, and health care work force education on health literacy topics. Consequently, the role of leadership in making health literacy concepts part of strategic planning and instituting policies and protocols in the organizational culture is seen as an important attribute of a health literate health care organization.

The HLEHH assesses the overall policy and protocol climate of UTMC. Specifically, the Policies and Protocols Rating tool addressed use of print, oral exchange, staff orientation, and staff skills building.

Methods

The Policy and Protocol Rating (PPR) tool measured the administrators' knowledge of the policies and protocols that have the potential to impact low health literacy patients at UTMC. Participants included members of the Management Briefing group that meets monthly.

Researchers distributed a copy of the rating tool to each person who attended the Management Briefing. At the start of the meeting, a research team member spoke briefly to the group about the project and encouraged their participation in completing the rating tool. After the meeting, researchers collected the rating forms from attendees. The data was entered into an Excel spreadsheet which was specifically designed for this project by the project statistician. Descriptive statistics were used to analyze the data.

Results Summary

The aggregated policy and protocol rating score of 36.01 ranks in the middle of three scoring ranges for this category indicating that UTMC should "augment efforts to eliminate literacy-related barriers." The implementation of this tool did not assess the actual state of policies and protocols, but instead assessed the participant's knowledge of these policies and protocols.

Areas where knowledge was strong included the fact that orientation programs were held for staff and volunteers. A majority of respondents were also aware that protocols prohibit the use of children, untrained staff, or volunteers as medical translators.

Knowledge exists but provides an opportunity for improvement in the knowledge of the grade level of print patient education, use of everyday words and phrases in all discussions with patients, and knowledge about workshops or educational opportunities for staff on the use of existing and new technologies, health literacy issues, and oral and print communication. Other opportunities for improvement include which literacy related topics are covered in the orientation, including health literacy issues, patient population demographics, and physical layout and design of the facility.

The majority of respondents did not have knowledge of the availability and training of staff translators, or about adult literacy resources in the community and whether the hospital offers employees adult education and English for speakers of other languages courses.

Results

Researchers received 77 forms out of a possible 264. The PPR tool score ranges from 0 to 57, with higher being better. The overall mean rating score was 36.0 (SD = 11.7). Many of the question were left unanswered and some had annotation that the respondent "did not know." The researchers evaluated the individual means for the data that was normally distributed. See Table 6 for the mean scores of the individual questions. The questions not reported in Table 6 all received the highest rating, with no variation (not normally distributed) (Table 7).

Table 6 – Mean Scores for the Individual Questions on the PPR

Question	Section	Mean	Standard Deviation	Did not answer (%)	Did not know (%)
The facility holds an orientation program for custodial staff.	Staff Orientation	2.70	.53	15.6	1.3
The facility holds an orientation program for all translation service staff.	Staff Orientation	2.66	.62	23.4	7.8
Protocols prohibit the use of children or untrained staff or volunteers as medical translators.	Oral Exchange	2.63	.65	13	2.6
The facility holds an orientation program for all Medical staff.	Staff Orientation	2.63	.61	18.2	1.3
All print materials for public display use plain, everyday words and phrases.	Use of Print	2.53	.53	0	0

Table 6 – Mean Scores for the Individual Questions on the PPR (continued from previous page)

Question	Section	Mean	Standard Deviation	Did not answer (%)	Did not know (%)
Orientation for all staff and volunteers includes a description of the physical layout and design of the facility.	Staff Orientation	2.48	.66	7.8	2.6
All print materials for patients are written at a reading grade level of 8 or below.	Use of Print	2.45	.58	5.2	2.6
All translators use plain, everyday words and phrases.	Oral Exchange	2.44	.69	19.5	9.1
All patients have an opportunity to ask questions about policies and protocols.	Use of Print	2.39	.65	10.4	2.6
The facility has a resource room available to all staff and volunteers with DVDs, booklets, Web sites, etc. about health literacy issues.	Staff Skills Building	2.34	.74	16.9	7.8
Orientation for all staff and volunteers includes information about the patient population.	Staff Orientation	2.33	.75	10.4	2.6
Staff trained in translations services are available.	Oral Exchange	2.30	.79	9.1	1.3
All staff and volunteers use plain, everyday words and phrases in all discussions with patients.	Oral Exchange	2.25	.59	7.8	5.2
The facility offers CME credit courses related to health literacy and communication for all professional staff.	Staff Skills Building	2.24	.67	19.5	9.1
The facility offers on-site training or workshops about health literacy issues related to print communication for all relevant staff and volunteers.	Staff Skills Building	2.20	.71	18.2	3.9
All new print materials are piloted with members of the intended audience.	Use of Print	2.18	.74	11.7	7.8
The facility offers on-site training or workshops about health literacy issues related to oral exchange for all relevant staff and volunteers.	Staff Skills Building	2.16	.73	19.5	6.5
The facility offers on-site training or workshops about how to use existing and new technologies for all relevant staff and volunteers.	Staff Skills Building	2.15	.66	20.8	1.3
Orientation for all staff and volunteers includes a discussion about literacy issues.	Staff Skills Building	2.13	.72	13	3.9
The facility offers employees adult education and English for Speakers of Other Languages (ESOL) courses to build literacy skills.	Staff Skills Building	1.89	.84	20.8	9.1
All staff know about adult literacy resources in the community. If asked, they could tell a patient or fellow employee where to get help to improve literacy skills.	Staff Skills Building	1.79	.77	19.5	5.2

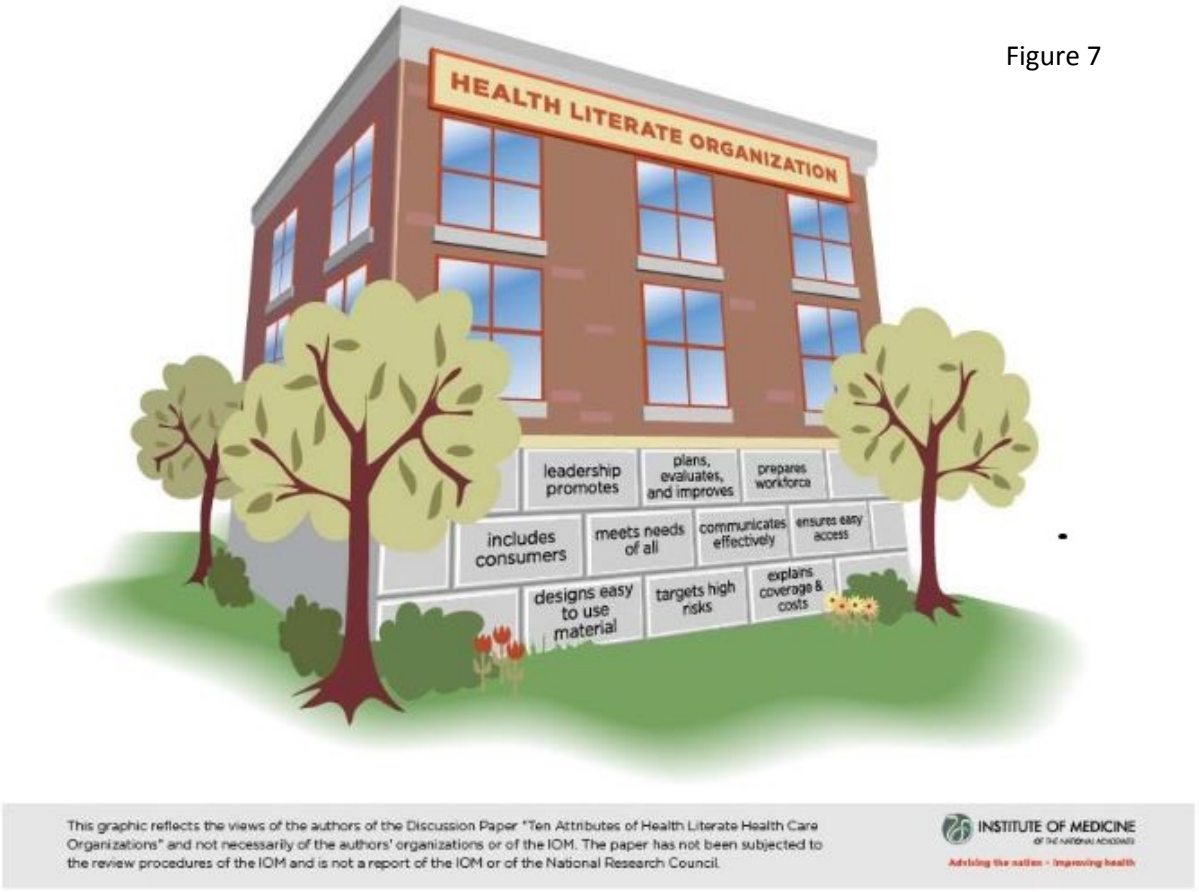
Table 7 – PPR Highest Rated Questions			
Question	Section	Didn't answer (%)	Didn't know (%)
The facility holds an orientation program for administrative staff.	Staff Orientation	9.1	0
The facility holds an orientation program for intake staff.	Staff Orientation	15.6	1.3
The facility holds an orientation program for discharge coordinator.	Staff Orientation	16.9	2.6
The facility holds an orientation program for Nursing.	Staff Orientation	13	0
The facility holds an orientation program for pharmacy.	Staff Orientation	16.9	1.3
The facility holds an orientation program for allied health professionals.	Staff Orientation	15.6	1.3
The facility holds an orientation program for telephone and help desk staff.	Staff Orientation	14.3	1.3
The facility holds an orientation program for volunteers.	Staff Orientation	13	1.3

Discussion

The use of the PPR did not measure whether the Policies and Protocols on the tool exist at UTMC, but rather the level of knowledge of the management group who completed the PPR. Many questions were left blank (unanswered) and in many cases, it was noted that the participant "did not know" if the policy or protocol in the question was in place at UTMC. An increased knowledge of polices and protocols related to health literacy would be beneficial in order to improve patient engagement and outcomes since the evidence is strong that engaging patients in their health care depends in large part on health literacy.[43]

The concept of health literate organizations, introduced by the IOM in 2012, is based on the idea that all health care organizations have a responsibility to develop a structure that improves communication and facilitates the use of health care service for all patients, especially those with low health literacy.[9] The Ten Attributes report focuses on defining what qualities a "Health Literate" health care organization should have. These attributes are viewed as a foundation as depicted in the graphic from the report (Figure 7). This foundation is based on institutional policies and protocols that drive behavior.[9]

Figure 7



A basis for understanding the types of policies and protocols that should be addressed are illustrated in several sources. The National Action Plan to Improve Health Literacy focuses on the health care delivery system and policies changes that have the potential to "improve health information, communication, informed decision-making, and access to health services."[8] Results of the PPR assessment at UTMC indicates that knowledge about policies and protocols regarding oral and print communication varies. The Joint Commission (TJC) provided a checklist for effective communication in the "Roadmap for Hospitals."[24] The Roadmap includes requirements for staff orientations to address cultural diversity, assessment of a patient's "cultural and religious beliefs," and "barriers to communication."[24] UTMC results indicate that additional awareness is needed regarding policies to ensure that support staff orientations include information about patient demographics. The Federal Government, through the Patient Protection and Affordable Care Act (ACA), also recognizes the need for policies by including language that calls for "health and health care information to be communicated clearly, for promoting prevention, creation of a patient centered environment and ensuring equity and cultural competence."[45] While neither the ACA nor TJC language is expressed in terms of specific policies or protocols, each item on the list would require that a policy exists to support its implementation in the hospital setting.

More recently, Cosgrove discussed the "CEO Checklist for High-Value Care" and illustrated how using the Checklist benefited health care organizations and patients.[46] Among the themes discussed was patient engagement. Cosgrove illustrated how policies and protocol changes impacted patient engagement and "high-value care" in five categories: delivering evidence-based care; developing team–

based approaches and shared decision making; making delivery more efficient; and providing care in new ways by targeting care to patients and community needs."[46]

The PPR was designed to assess policies and protocols related to "barriers to health care access and navigation."[12] Our research has shown that there are opportunities to examine further whether the policies and protocols exist, and to increase knowledge of those that are in place to ensure they are being implemented.

Specific action based on best practices that can be taken by UTMC regarding policies and protocol include:

- Increase knowledge of policies and protocols related to health literacy, including:
  - Plain language in oral communication and teach-back communication methods.
  - Grade level requirement for patient education material.
- Increase awareness of patient population demographics, health literacy characteristics related to those demographics, and the policies and protocols in place to mitigate the impact of low health literacy in those groups.

Technology

Introduction

Technology impacts the healthcare system in that "health information technology has become an important vehicle for providing health information to consumers."[47] The Pew Research Center found that "72% of internet users say they looked online for health information" and "eight in ten online health inquiries start at a search engine."[48] Additionally, two thirds of the population own a smartphone and 62% have used their phone to "look up information about a health condition" in the past year.[48] However, those with limited health literacy are less likely to use health information technology as compared to those with higher literacy.[47] Additionally, Mackert discovered that low health literacy patients were less likely to see health information technology tools as easy to use, and they were less likely to use them compared to health literate patients.[49] Therefore, health information technology needs to be designed with the low health literacy population in mind.

A dimension of health literacy, eHealth literacy is "the ability to seek, find, understand, and appraise health information from electronic sources and apply this knowledge to addressing or solving a health problem."[47] eHealth literacy includes the use of patient portals, health applications for phones, and electronic health records. Through the use of technology, patients have the capability to access their health records in patient portals and search for information on health topics. In addition, health information technology can be used to send text messages to patients reminding them to take their medication.[50] Health information technology also allows patients' health information to be readily available to them and gives patients easier access to their health records as well as more visual and interactive forms of health information.[47]

The Centers for Medicare and Medicaid Services emphasize the importance of technology in order for patients to have the capability to access their health records and, in so doing, become more connected to their provider.[51] Through patient portals, patients are able to participate in self-management for chronic conditions.[51] Therefore, hospitals need to be active in the use of technology in order to better patients' health.

The HLEHH assessed of the use of technology through review of televisions, telephones, patient engagement, and computers.

Methods

Technology use at UTMC was evaluated using the Technology Rating Tool (TRT). Researchers edited the tool to better reflect technology today, including: accessing test results online, accessing prescription history, requesting health information from hospital rooms, and requesting video chat (Appendix 6).

Researchers completed the assessment using UTMC's website as the authoritative source. If the website provided the answer to the question directly and affirmatively, a rating of "3" was given. If the answers were not on the website, but it was known to be true to researchers' knowledge, a rating of "2" was given. If the answers were not on the website and it was not known to be true, a rating of "1" was given. The data was entered into an Excel spreadsheet which was specifically designed for this project by the project statistician. Descriptive statistics were used.

Results Summary
The aggregate Technology Rating score of 47 ranks in the top of three scoring ranges in this category indicating that UTMC should "continue to monitor and eliminate literacy-related barriers."

Higher performing areas in technology at UTMC included the categories "televisions" and "patient engagement." The television category included use of televisions for orientation, educational purposes, and the delivery of health information videos. Patient engagement category included the patient portal, access to laboratory test and prescription history online, and the ability to request health information and video chat from patient rooms. Access to computers that have the capacity for educational purposes and have internet access also contribute to the high ranking.

Opportunities exist in the category of "telephones." Although they are available to patients in multiple locations, telephones do not offer directions to people throughout the facility or offer links to translation services.

Results

The Technology Rating score ranges from 0 to 54 with higher being better. The overall technology rating score was 47. The following is the proportion of rankings on the Technology Rating Tool: 72.2% were ranked as a 3 (highest ranking), 16.7% were ranked as a 2 (middle ranking), and 11.1% were ranked as a 1 (lowest ranking). See Table 8 for details on question rankings.

Table 8 – TRT Questions and Rank

Question	Section	Rank
Televisions are available to patients in one or more locations.	Televisions	3
Televisions can deliver digital health information videos.	Televisions	3
Televisions are used for orientation purposes.	Televisions	3
Televisions are used for educational purposes.	Televisions	3
House telephones are available to patients in one or more locations.	Telephones	3
Computers are available to patients in one or more locations.	Computers	3
Computers have capacity for educational purposes.	Computers	3
Computers have internet connection.	Computers	3
Computers have access to social media.	Computers	3
Patients can access their test results online.	Patient Engagement	3
Patients can access their prescription history online.	Patient Engagement	3
Patients can request health information from the room.	Patient Engagement	3
Patients can request "video chat" from their rooms.	Patient Engagement	3
Computers have headsets connected to them.	Computers	2
Exam rooms have computers to show patients their medical record.	Computers	2
Providers can print out specific patient education.	Computers	2
House telephones offer direction to people throughout the facility.	Telephones	1
House telephones offer links to translation services.	Telephones	1

Discussion

As previously stated, Americans are consistently using technology to find health information and, therefore, the use of technology to provide health information to consumers is increasing.[47] According to Weinstock, organizations on the 2015 Most Wired* list are consistently improving their patient engagement by connecting daily with patients through the Internet, such as providing education and allowing for e-visits with the health care team.[51] For example, MetroHealth System uses an automated screening and alert system, which led to a "15-fold increase in screening and 23% increase in diagnosis for depression."[51] Since patients with low health literacy tend to avoid health screenings, implementing an automated screening process can increase preventative care. UTMC scored well in regards to patient engagement through technology because of the use of televisions to deliver patient education, the ability to request health information from patient rooms, and the availability of computers in more than one location. However, there are other best practices that can enhance the patient experience at UTMC.

Medicare and Medicaid Services place an "emphasis on ensuring that patients can access their health records and become more connected with their providers" through patient portals.[51] Patients at UTMC can access their test results and prescription history online; however, the Most Wired organizations use patient portals to offer self-management for chronic conditions, incorporate patient generated data, and offer patient specific education in multiple languages. Additionally, the Most Wired organizations note the importance of patient portals being user-friendly and useful.[51] When creating patient portals, AHRQ reminds developers and purchasers the importance of ensuring that the "reading level, content, and format of these technologies are accessible to limited-literacy populations."[47]

Since two thirds of the population owns a smartphone, patient portals need to be available for smartphones and mobile devices. 79% of all hospitals surveyed, and 89% of the Most Wired organizations, offer patients access to their portal through a mobile application.[51] However, UTMC does not currently offer mobile access to patient portals.

Lakeland Regional Medical Center, one of the 2015 Most Wired organizations, uses technology to identify patients who are most at risk for readmission. The list is then "sent to care transition coaches who work with patients on their treatment plans."[51] The organization provides a team with near-real time information on patients to perform predictive analysis, which then identifies the patients that need the most attention in order for the organization to target those patients for interventions. Lakeland Regional Medical Center sees technology and these digital tools as a way to work with clinicians to improve health care delivery and the health of the community.[51] This is an opportunity for UTMC to better incorporate technology to potentially reduce readmissions and better the health of the community.

*Covenant Health, Emory Healthcare are listed as one of the 2015 Most Wired organizations.

Specific actions based on best practices that UTMC could take to improve technology include:

- Providing an engaging patient portal.
- Promote the use of a smart phone app for accessing patient portals.

Study Limitations

Limitations to this study include those that exist within the HLEHH instrument. Options for responses on each of the tools within the HLEHH manual are limited to a 3 point scale. The preferred scale is a five or even seven point scale which results in data being available on a continuum from strongly agree to strongly disagree therefore offering a richer dataset. In addition, outdated items on the technology and navigation rating forms were updated by the researchers, therefore challenging content validity.

The cross-sectional design of the print assessment limits the ability of researchers to infer "causal effect" due to lack of randomization. We cannot say with certainty that results found with the sample of 150 documents we reviewed would be duplicated in the whole population documents. Future research should include a truly randomized sample of the total number of documents.

The low inter-rater reliability between raters using the PEMAT precluded using the data from that part of the print assessment study, therefore we did not have valid data on the "actionability and usability." Further research should be done to understand why there was a low interrater reliability and to further explore the validity of this tool.

Limitations of the oral communication research include the potential bias due to social desirability of respondents during the patient interviews. In addition, since only three locations within the medical center were included, we cannot say with certainty that results would be repeated in other areas. Future research should include other outpatient and inpatient areas.

The small sample size of only seven participants is a limitation in the assessment of the navigation at UTMC. In addition, the participants were students who were completing higher education degrees and may not be representative of the patient population of UTMC. Future studies should include a larger panel of participants that are representative of the patient population.

The Policy and Protocols Rating tool was completed by only 29.17% of the management team. We cannot say with certainty that results found within that sample would be duplicated in the whole population. In addition, many questions were left blank or noted as "didn't know" which was not an option on the tool, therefore the findings may not be valid.

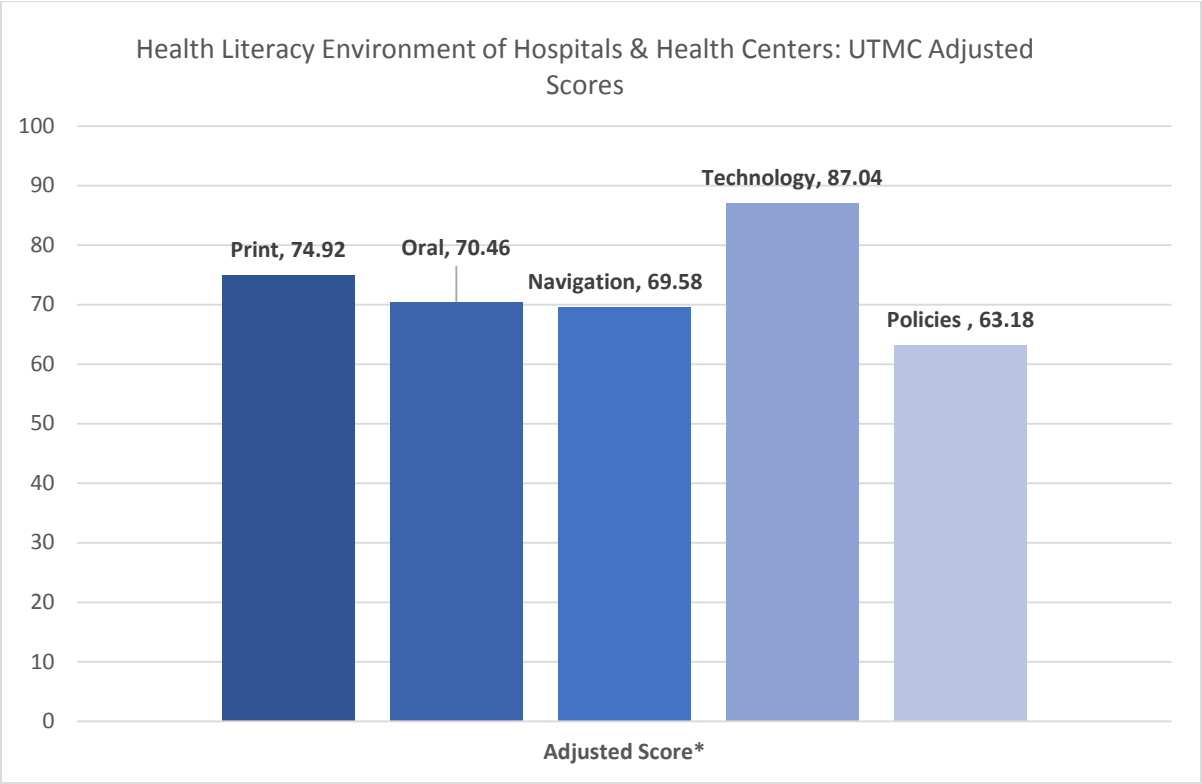
Conclusion

Health literacy affects people of all ages and education levels. The National Action Plan to Improve Health Literacy was the first to focus on systematic problems rather than potential shortcomings of patients. At UTMC, a task force was created to assess the organization's current state of health literacy and to serve as a catalyst for promoting changes at UTMC. The HLEHH offered a set of tools to measure five aspects of the health care organization that impact patients with low health literacy, including: Print Communication, Oral Communication, Navigation, Policies and Protocol, and Technology.

A rigorous approach was taken in regards to the research project, beginning with applying for and receiving an exemption from Institutional Review Board (IRB) and the participation of a biostatistician in the research design. Each of the five HLEHH tools was applied sequentially to the environment of UTMC. Data for each assessment was collected over a six-month time period and then analyzed by the research team using statistical analysis and qualitative research methods. The scope of the project included the following: analyzing 150 print patient education documents, interviewing 298 patients, receiving feedback from 7 navigators, measuring 77 administrators' knowledge of policies and protocols, and assessing technology using an authoritative source.

Overall, UTMC's aggregate score ranked in the highest category, with a score of 218.57, which translates with in the HLEHH scoring rubric as "continue to monitor and eliminate literacy-related barriers." The individual category scores were as follows: Navigation Rating score: 64.71; Print Communication Rating: 53.94; Oral Communications score: 16.91; Technology score: 47; Policies and Protocols score: 36.01. For ease of comparison, researchers converted each category to a 100 point scale by establishing ratios to solve for X. For example, for the Oral Communication score:$\frac{16.91}{24} = \frac{X}{100}$. See Figure 8 for the converted scores.

Figure 8



Although three of the ratings scored in the highest category, these ratings were on the lower end of that range. In addition, two categories scored in the middle category indicating opportunity for improvement. Therefore, researchers reviewed each tool on a question by question basis to reveal more granular information on where there are opportunities to improve the health care environment for low health literate patients. This analysis resulted in proposing specific actions based on best practices that UTMC could implement in the coming year. These actions will be documented and reported at the annual health literacy event.

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Appendix 1
THE 10 ATTRIBUTES*

A health literate health care organization:

1. Has leadership that makes health literacy integral to its mission, structure, and operations.
2. Integrates health literacy into planning, evaluation measures, patient safety, and quality improvement.
3. Prepares the workforce to be health literate and monitors progress.
4. Includes populations served in the design, implementation, and evaluation of health information and services.
5. Meets the needs of populations with a range of health literacy skills while avoiding stigmatization.
6. Uses health literacy strategies in interpersonal communications and confirms understanding at all points of contact.
7. Provides easy access to health information and services and navigation assistance.
8. Designs and distributes print, audiovisual, and social media content that is easy to understand and act on.
9. Addresses health literacy in high-risk situations, including care transitions and communications about medicines.
10. Communicates clearly what health plans cover and what individuals will have to pay for services.

*As seen in the Institute of Medicine's 2012 Report, "The Ten Attributes of Health Literate Health Center Organizations"

Telephone Assessment Form

Date: _____ Your name: _____

Facility you are calling: _____

Telephone number of facility you are calling: _____

Location you want directions from: _____

Start of call

a. Time phone was answered: _____

b. Telephone answered by: ☐ Automated system ☐ Person

End of call

a. Time call ended: _____

b. Last interaction I had was with: ☐ Automated system ☐ Person

Automated System

1. Is there an option for another language?
   ☐ Yes--If yes, which: _____
   ☐ No

2. Number of menu options before you reach a person?
   ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
   1 2 3 4 5 6 7 No option

3. Number of menu options for directions to the hospital or health center?
   ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
   1 2 3 4 5 6 7 No option

4. Is there an option to repeat menus?
   ☐ Yes
   ☐ No

5. What is the speed of the menu options?
   ☐ Very fast
   ☐ Fast
   ☐ Slow
   ☐ Very slow

6. Was the call successful? (Were you able to get what you needed?)
   ☐ Yes
   ☐ No

Reaching a Person

1. Does the person speak a language in addition to English?
   ☐ Yes--If yes, which: _____
   ☐ No

2. What is the tone of the person's voice?
   ☐ Warm/ welcoming
   ☐ Neutral
   ☐ Cold/standoffish

3. What is the speed of the person's speech?
   ☐ Very fast
   ☐ Fast
   ☐ Slow
   ☐ Very slow

4. Was the call successful? (Were you able to get what you needed?)
   ☐ Yes
   ☐ No

Please continue onto next page→

Part 1: Navigation Rating

Please check the ONE response that most accurately describes your hospital or health center today using the following rating scale:

1. **This is something that is not done.**
2. **This is done, but needs some improvements.**
3. **This is done well.**

A. Telephone System

	1	2	3
1. When a phone call is answered (either by person or an automated phone system), there is an option to hear information in a language other than English.	☐	☐	☐
2. If there is an automated phone system, there is an option to speak with an operator or help desk.	☐	☐	☐
3. If there is an automated phone system, there is an option to repeat menu items.	☐	☐	☐
4. Information is offered (either by person or an automated phone system) with plain, everyday words.	☐	☐	☐

B. Entrance

	1	2	3
5. The healthcare facility's name is clearly displayed on the outside of the building.	☐	☐	☐
6. All entry signs are visible from the street.	☐	☐	☐
7. The signs use plain, everyday words such as "Walk-In" rather than formal words such as "Ambulatory Care".	☐	☐	☐

C. Lobby

	1	2	3
8. There is a map in the lobby.	☐	☐	☐
9. The map includes a key.	☐	☐	☐
10. The map shows the present location with a "you are here" and/or a star or symbol.	☐	☐	☐
11. Handheld maps are available for people to take with them.	☐	☐	☐
12. There is a welcome or information desk.	☐	☐	☐
13. A sign indicates the welcome or information desk.	☐	☐	☐

Part 1: Navigation Rating *(continued)*

Please check the ONE response that most accurately describes your hospital or health center today using the following rating scale:

1. **This is something that is not done.**
2. **This is done, but needs some improvements.**
3. **This is done well.**

D. Staff Assistance

	1	2	3
14. Staff or volunteers are available at or near the main entrance to help visitors.	☐	☐	☐
15. Multilingual staff or volunteers are available at or near the main entrance to help visitors.	☐	☐	☐
16. Staff or volunteers are present at the welcome or information desk.	☐	☐	☐
17. Multilingual staff or volunteers are available at the welcome or information desk.	☐	☐	☐
18. Staff or volunteers wear identification such as a button, uniform, or nametag.	☐	☐	☐

E. Hallways: Navigation Ease

	1	2	3
19. Maps are posted at various locations around the facility.	☐	☐	☐
20. Words used for locations on signs throughout the facility remain consistent (i.e. the "Cafeteria" is always referred to as "Cafeteria", not as "Café" or "Restaurant").	☐	☐	☐
21. Consistent symbols/graphics are used on signs throughout the facility.	☐	☐	☐
22. Overhead signs use large, clearly visible lettering.	☐	☐	☐
23. Wall (eye level) signs use large, clearly visible lettering.	☐	☐	☐
24. Signs are written in English and in the primary languages of the populations being served (i.e., if most of the patients speak English and Spanish, signs are written in English and Spanish).	☐	☐	☐
25. Color codes are used consistently on the walls or floors throughout the facility to mark paths to and from various sections of the facility.	☐	☐	☐

Part 1: Navigation Rating *(continued)*

Please check the ONE response that most accurately describes your hospital or health center today using the following rating scale:

1. **This is something that is not done.**
2. **This is done, but needs some improvements.**
3. **This is done well.**

F. Service and Specialty Areas (Medical Records, Pharmacy, MRI, etc.)

	1	2	3
26. The name of the clinic/service area is clearly posted.	☐	☐	☐
27. Sign-in procedures are clearly indicated.	☐	☐	☐
28. Staff offer help for completing any needed paperwork.	☐	☐	☐
29. Materials provided to patients have been assessed for their reading grade level (8th grade or below).	☐	☐	☐
30. Materials provided to patients have been assessed for their cultural appropriateness.	☐	☐	☐
31. Materials provided to patients are written in the primary languages of the populations being served.	☐	☐	☐

Part 1: Navigation Rating Summary

Calculating Your Navigation Score			
Response	Tally	Multiply	Score
1. This is something that is not done.		x 1 =	
2. This is done, but needs some improvements.		x 2 =	
3. This is done well.		x 3 =	
		TOTAL SCORE =	

Interpreting Your Navigation Score	
Score Range	Next Steps
0-30	Begin a focused initiative to eliminate literacy-related barriers.
31-61	Augment efforts to eliminate literacy-related barriers.
62-93	Continue to monitor and eliminate literacy-related barriers.

Part 2: Print Communication Rating

Type of material being assessed (please check one):

- ☐ Community relations
- ☐ Patient/client orientation
- ☐ Forms patients fill out
- ☐ Follow up notifications
- ☐ Patient education materials
- ☐ Legal materials
- ☐ Discharge preparation

Purpose of the material being assessed (please check one):

- ☐ Deliver information (e.g., patient education about asthma)
- ☐ Provide directions (e.g., directions for using a peak flow meter)
- ☐ Collect information (e.g., a health history form)

Please check the ONE response that most accurately describes the print material using the following rating scale:

1. **This is something that is not done.**
2. **This is done, but needs some improvements.**
3. **This is done well.**

A. Writing Style

	1	2	3
1. The material emphasizes and summarizes the main points.	☐	☐	☐
2. The information is grouped into meaningful sections.	☐	☐	☐
3. The material is written in the active voice and in a conversational style.	☐	☐	☐
4. The material uses devices to engage and involve the reader, such as question and answer format, true-or-false, stories, or dialogues.	☐	☐	☐
5. The words and sentences are generally short, simple, and direct.	☐	☐	☐
6. If medical terms (such as "dosage" or "monitoring") are used, they are clearly explained with helpful examples.	☐	☐	☐
7. The reading grade level is that of the average U.S. adult (8th grade or below).	☐	☐	☐
8. Translations use plain, everyday words, and short sentences.	☐	☐	☐

Part 2: Print Communication Rating *(continued)*

Please check the ONE response that most accurately describes the print material your hospital or health center uses, using the following rating scale:

1. **This is something that is not done.**
2. **This is done, but needs some improvements.**
3. **This is done well.**

B. Organization and Design

	1	2	3
9. The material uses headings, subheadings, or other devices to signal what is coming next.	☐	☐	☐
10. The labels for sections, headings, and subheadings are clear.	☐	☐	☐
11. The material looks uncluttered, with generous margins and plenty of white space.	☐	☐	☐
12. The graphic design uses devices such as contrast, bullets, and indentation to signal the main points and make the text easy to skim.	☐	☐	☐
13. The material uses bullets effectively (size, shape, spacing, and color.)	☐	☐	☐
14. Explanatory illustrations, diagrams, tables, charts, and graphs are clearly labeled and placed near the text that introduces them.	☐	☐	☐

C. Type Style, Size of Print, and Contrast with Paper

	1	2	3
15. The font size is 12-point or greater.	☐	☐	☐
16. The text uses CAPITAL letters only when needed grammatically.	☐	☐	☐
17. The text avoids splitting words across two lines.	☐	☐	☐
18. There is contrast between the printed text and the paper.	☐	☐	☐
19. The print does not overlay pictures or designs.	☐	☐	☐

Part 2: Print Communication Rating *(continued)*

Please check the ONE response that most accurately describes the print material your hospital or health center uses, using the following rating scale:

1. **This is something that is not done.**
2. **This is done, but needs some improvements.**
3. **This is done well.**

D. Photographs, Illustrations, Symbols, and Diversity

	1	2	3
20. The material uses photos, illustrations, symbols, patterns, and other visuals to reinforce key messages.	☐	☐	☐
21. The material avoids using cartoons, humor, and caricature, which may be understood as offensive.	☐	☐	☐
22. The people and activities shown in photos or illustrations are contemporary.	☐	☐	☐
23. The people and activities shown in photos or illustrations are representative (in their demographics, physical appearance, behavior, and cultural elements) of the intended audience of the materials.	☐	☐	☐
24. The material shows awareness of and respect for diversity, and uses culturally appropriate words and examples.	☐	☐	☐

Part 2: Print Communication Rating Summary

Calculating Your Print Communication Score			
Response	Tally	Multiply	Score
1. This is something that is not done.		x 1 =	
2. This is done, but needs some improvements.		x 2 =	
3. This is done well.		x 3 =	
		TOTAL SCORE =	

Interpreting Your Print Communication Score	
Score Range	Next Steps
0-23	Begin a focused initiative to eliminate literacy-related barriers.
24-47	Augment efforts to eliminate literacy-related barriers.
48-72	Continue to monitor and eliminate literacy-related barriers.

Part 3: Oral Exchange Rating

Please check the ONE response that most accurately describes staff oral communication skills at your hospital or health center today using the following rating scale:

1. **This is something that is not done.**
2. **This is done, but needs some improvements.**
3. **This is done well.**

Oral Exchange

	1	2	3
1. Staff offers everyone help (i.e., filling out forms, getting directions) regardless of appearance.	☐	☐	☐
2. Multilingual staff are available to help people.	☐	☐	☐
3. Staff uses sentences that are short, direct, and use plain, everyday words.	☐	☐	☐
4. Staff adjusts the pace of their speech when they work with people for whom English is a second language.	☐	☐	☐
5. Staff checks in with patients by asking "Am I being clear?" rather than "Do you understand?"	☐	☐	☐
6. Staff asks patients if they have any questions.	☐	☐	☐
7. Staff uses audio and/or videotapes when such materials are available.	☐	☐	☐
8. Translation services are available or can be called in with short notice.	☐	☐	☐

Part 3: Oral Exchange Rating Summary

Calculating Your Oral Exchange Score			
Response	**Tally**	**Multiply**	**Score**
1. This is something that is not done.		x 1 =	
2. This is done, but needs some improvements.		x 2 =	
3. This is done well.		x 3 =	
		TOTAL SCORE =	

Interpreting Your Oral Exchange Score	
Score Range	**Next Steps**
0-8	Begin a focused initiative to eliminate literacy-related barriers.
9-16	Augment efforts to eliminate literacy-related barriers.
17-24	Continue to monitor and eliminate literacy-related barriers.

Part 4: Technology Rating

Please check the ONE response that most accurately describes the current technology your hospital or health center uses, using the following rating scale:

1. **This is something that is not done.**
2. **This is done, but needs some improvements.**
3. **This is done well.**

Technology

	1	2	3
Televisions			
1. Televisions are available to patients in one or more locations (i.e., waiting areas, testing sites, pharmacy).	☐	☐	☐
2. Televisions are equipped for DVD or VCR use.	☐	☐	☐
3. Televisions are used for orientation purposes.	☐	☐	☐
4. Televisions are used for educational purposes.	☐	☐	☐
Telephones			
5. House telephones are available to patients in one or more locations (i.e., hallways, waiting areas, testing sites, pharmacy).	☐	☐	☐
6. House telephones offer directions to people throughout the facility.	☐	☐	☐
7. House telephones offer links to translation services.	☐	☐	☐
Computers			
8. Computers are available to patients in one or more locations (i.e., waiting areas, testing sites, pharmacy, resource rooms).	☐	☐	☐
9. Computers are programmed for orientation purposes.	☐	☐	☐
10. Computers are programmed for educational purposes.	☐	☐	☐
11. Computers have Internet connections.	☐	☐	☐
12. Computers have headsets connected to them.	☐	☐	☐
13. Exam rooms have computers where providers can show patients parts of their electronic medical records.	☐	☐	☐
14. Providers can print out specific patient education materials.	☐	☐	☐
Kiosks			
15. Kiosks are available to patients in one or more locations (i.e., waiting areas, testing sites, pharmacy, resource rooms).	☐	☐	☐
16. Kiosks are programmed for orientation purposes.	☐	☐	☐
17. Kiosks are programmed for educational purposes.	☐	☐	☐
18. Kiosks have headsets connected to them.	☐	☐	☐

Part 4: Technology Rating Summary

Calculating Your Technology Score			
Response	**Tally**	**Multiply**	**Score**
1. This is something that is not done.		x 1 =	
2. This is done, but needs some improvements.		x 2 =	
3. This is done well.		x 3 =	
		TOTAL SCORE =	

Interpreting Your Technology Score	
Score Range	**Next Steps**
0-17	Begin a focused initiative to eliminate literacy-related barriers.
18-35	Augment efforts to eliminate literacy-related barriers.
36-54	Continue to monitor and eliminate literacy-related barriers.

Part 5: Policies & Protocols Rating

Please check the ONE response that most accurately describes the policies and protocols at your hospital or health center today, using the following rating scale:

1. **This is something that is not done.**
2. **This is done, but needs some improvements.**
3. **This is done well.**

A. Use of Print

	1	2	3
1. All print materials for public display use plain, everyday words and phrases.	☐	☐	☐
2. All print materials for patients are written at a reading grade level of 8 or below.	☐	☐	☐
3. All new print materials are piloted with members of the intended audience.	☐	☐	☐
4. All patients have an opportunity to ask questions about policies and protocols.	☐	☐	☐

B. Oral Exchange

	1	2	3
5. All staff and volunteers use plain, everyday words and phrases in all discussions with patients.	☐	☐	☐
6. Staff trained in translations services are available.	☐	☐	☐
7. Protocols prohibit the use of children or untrained staff or volunteers as medical translators.	☐	☐	☐
8. All translators use plain, everyday words and phrases.	☐	☐	☐

Part 5: Policies & Protocols Rating *(continued)*

Please check the ONE response that most accurately describes the policies and protocols at your hospital or health center today, using the following rating scale:

1. **This is something that is not done.**
2. **This is done, but needs some improvements.**
3. **This is done well.**

C. Staff Orientation

	1	2	3
9. The facility holds an orientation program for all staff and volunteers who may interact with patients. All staff and volunteers include:			
a. Administrative staff (support staff, coordinator)	☐	☐	☐
b. Intake staff	☐	☐	☐
c. Discharge coordinator	☐	☐	☐
d. Nursing (RNs, LPNs)	☐	☐	☐
e. Medical (MDs, NPs, PAs, DOs, DMD)	☐	☐	☐
f. Pharmacy (pharmacists, educators, technicians)	☐	☐	☐
g. Allied health professionals (social workers , physical therapists, occupational therapists, educators, medical assistants, x-ray technicians)	☐	☐	☐
h. Translation service staff	☐	☐	☐
i. Telephone and help desk staff	☐	☐	☐
j. Custodial staff	☐	☐	☐
k. Volunteers	☐	☐	☐
10. Orientation for all staff and volunteers includes a description of the physical layout and design of the facility.	☐	☐	☐
11. Orientation for all staff and volunteers includes a discussion about literacy issues.	☐	☐	☐
12. Orientation for all staff and volunteers includes information about the patient population (cultures, languages and other demographics).	☐	☐	☐

Part 5: Policies & Protocols Rating *(continued)*

Please check the ONE response that most accurately describes the policies and protocols at your hospital or health center today, using the following rating scale:

1. **This is something that is not done.**
2. **This is done, but needs some improvements.**
3. **This is done well.**

D. Staff Skills Building (print communication and oral exchange)

	1	2	3
13. The facility offers on-site training or workshops about health literacy issues related to print communication for all relevant staff and volunteers.	☐	☐	☐
14. The facility offers on-site training or workshops about health literacy issues related to oral exchange for all relevant staff and volunteers.	☐	☐	☐
15. The facility offers on-site training or workshops about how to use existing and new technologies (i.e., exam room computers, use of electronic medical records) for all relevant staff and volunteers.	☐	☐	☐
16. The facility offers CME credit courses related to health literacy and communication for all professional staff.	☐	☐	☐
17. The facility offers employees adult education and English for Speakers of Other Languages (ESOL) courses to build literacy skills.	☐	☐	☐
18. All staff know about adult literacy resources in the community. If asked, they could tell a patient or fellow employee where to get help to improve literacy skills.	☐	☐	☐
19. The facility has a resource room available to all staff and volunteers with DVDs, booklets, Web sites, etc. about health literacy issues.	☐	☐	☐

Part 5: Policies & Protocols Rating Summary

Calculating Your Policies & Protocols Score			
Response	**Tally**	**Multiply**	**Score**
1. This is something that is not done.		x 1 =	
2. This is done, but needs some improvements.		x 2 =	
3. This is done well.		x 3 =	
		TOTAL SCORE =	

Interpreting Your Policies & Protocols Score	
Score Range	**Next Steps**
0-18	Begin a focused initiative to eliminate literacy-related barriers.
19-37	Augment efforts to eliminate literacy-related barriers.
38-57	Continue to monitor and eliminate literacy-related barriers.

Part 6: Summary Sheet for Review & Analysis

Calculating Your Overall Score for the Health Literacy Environment Review	
Section of Review	**Score for Section**
1. Navigation	
2. Print Communication	
3. Oral Exchange	
4. Technology	
5. Policies & Protocols	
TOTAL =	

Interpreting Your Overall Score for the Health Literacy Environment Review	
Score Range	**Next Steps**
0-100	**Begin a focused initiative to eliminate literacy-related barriers.**
101-200	**Augment efforts to eliminate literacy-related barriers.**
201-300	**Continue to monitor and eliminate literacy-related barriers.**

Appendix 3

SMOG vs. Flesch-Kincaid Grade Levels

Usage	Document Title	Document ID Number	SMOG	Flesch-Kincaid Grade Level
8061	General Anesthesia, Adult, Care After	1	10.7	7.5
3970	HF Zone Sheet- English 04-2013 (Custom)	2	6.3	4.2
3339	Heart-Healthy Eating Plan, Easy-to-Read	3	8.7	5.3
3145	CPR, Infant	4	10.7	8
3092	WC Home Care Guidelines English 2014 (Custom)	5	7	6.1
2858	Groin Site Care 2013 (Custom)	6	8.7	5.7
2849	Postpartum Depression and Baby Blues	7	11	7.8
2783	Surgical Site Infections FAQs - SHEA	8	10.3	7.7
2651	Abdominal Pain, Adult	9	10	6.7
2519	UOS Discharge Instructions 12-2014 (Custom)	10	11.3	8.2
2453	Warfarin: What You Need to Know	11	10.7	7.4
2222	Warfarin Coagulopathy	12	11.3	8.1
2205	Vitamin K Foods and Warfarin	13	8.3	4.5
2054	Urinary Tract Infection	14	10.3	7.8
1901	Heart Failure, Easy-to-Read	15	7.7	4.7
1889	Cardiac Rehabilitation	16	10.7	6.7
1808	Low-Sodium Eating Plan	17	9.3	6.1
1675	Back Pain, Adult	18	8	5
1585	Cystoscopy, Care After	19	8.7	6.3
1542	How and Where to Give Subcutaneous Enoxaparin Injections	20	11	8
1541	Cardiac Nuclear Scanning	21	10.7	7.1
2433	Chest Pain (Nonspecific), Easy-to-Read	22	8.7	5.3
1311	COPD Action Plan-English 2011 (Custom)	23	8.3	Image, cannot perform
1260	Hypertension	24	8.7	6.4
1231	Postpartum Care After Vaginal Delivery	25	11.7	7.8
1227	Outpatient Surgery Guidelines, Adult	26	10.7	6.9
1177	Chest Pain (Nonspecific)	27	9.7	6.4
1171	Nausea and Vomiting	28	10.7	7.5
1160	Cellulitis	29	10.3	7
1112	OB Preterm Labor Instructions (CUSTOM)	30	9	5.8 (had to add periods to end of sentences)

1091	Pneumonia, Adult	31	9	6.8
1037	Ureteral Stent Implantation, Care After	32	11	6.9
275	Deep Vein Thrombosis	33	9.7	7.3
1026	Laceration Care, Adult	34	9.3	5.8
984	Contusion	35	10.3	7.8
937	Coronary Angiogram	36	12	7.9
935	Pulmonary Disease and Exercise (Custom)	37	11	8.5
917	Chronic Obstructive Pulmonary Disease	38	11	7.5
855	Rib Fracture	39	10	7.3
816	Musculoskeletal Pain	40	10	6.9
813	Head Injury, Adult	41	10.3	7.5
811	Incision Care, Easy-to-Read	42	7.3	4.4
802	Incentive Spirometer	43	10.3	6.5
800	Smoking Cessation	44	8.7	6.4
790	FAQs CDC Surgical Site Infections 2010 (Custom)	45	9.7	Image, cannot perform
785	Acute Bronchitis	46	10	7.5
776	Abscess	47	10	7.4
764	Dialysis Vascular Access Malfunction	48	11	7.4
760	Urinary Tract Infection, Easy-to-Read	49	7.7	5.6
754	OB Term Labor Instructions (Custom)	50	9	7.4
751	Incision Care	51	10	6.4
729	Kidney Stones	52	11	7.9
711	Pneumonia, Adult, Easy-to-Read	53	8	4.8
709	Birth - Mom, Home Care Instructions	54	11	7.5
692	Stroke Prevention, Easy-to-Read	55	7.7	5
688	Chronic Obstructive Pulmonary Disease Exacerbation	56	10.3	7.9
666	Infection Control in the Home	57	8	5.2
654	Nonspecific Chest Pain	58	9.3	6.4
630	Radial Site Care	59	10.7	6.7
591	Flank Pain	60	9	5.4
589	Migraine Headache	61	7.7	5.3
584	Upper Respiratory Infection, Adult	62	9.7	5.9
582	Dental Pain	63	10.7	7.5
579	Abdominal Pain, Adult, Easy-to-Read	64	6.7	4.2

547	Tissue Adhesive Wound Care, Easy-to-Read	65	7	3.2
538	Muscle Strain	66	9.3	6.5
534	Coronary Angiogram With Stent, Care After	67	10	6.5
533	Lithotripsy, Care After	68	11	7.4
532	Heart Failure	69	10.7	7.2
529	Catheter-Associated Urinary Tract Infection FAQs - SHEA	70	12	9.5
527	Syncope	71	10.3	6.5
524	Chest Wall Pain	72	8.7	5.4
522	Alcohol Intoxication	73	11.7	8.3
516	Dental Abscess	74	8.7	5.8
495	How to Use an Inhaler	75	10	6.8
493	Form - Fetal Movement Counts	76	7.7	6.5
490	Preterm Labor Information, Easy-to-Read	77	7.7	5.1
488	Motor Vehicle Collision	78	9	6
481	Heart-Healthy Eating Plan	79	9	6
480	CathLab Implanted Cardiac Devices, Care After 12-2014 (CUSTOM)	80	9.7	6.4
478	Foley Catheter Care, Adult	81	10	5.6
473	Sepsis, Adult	82	9	6.9
471	Breastfeeding	83	9	6.7
471	Postpartum Care After Cesarean Delivery	84	11.7	7.9
469	Diarrhea	85	11	7.7
467	Seizure, Adult	86	8.7	6.2
463	Cervical Sprain	87	9.7	6.8
100-459	Pneumothorax	88	10.3	7
452	Concussion, Adult	89	9.7	6.9
443	Blood Transfusion, Easy-to-Read	90	9	5
442	Anterior Cervical Diskectomy and Fusion	91	10.7	6.9
439	Sciatica	92	10	6.9
436	General Anesthesia, Adult	93	11	7.8
435	Cellulitis, Easy-to-Read	94	8.7	5.3
434	Nausea and Vomiting, Easy-to-Read	95	6.3	3.6
432	Stroke Prevention	96	9.7	7.6
431	Ankle Sprain	97	9.3	6.8
430	Walker Use	98	7	4.8

428	Knee Pain	99	10	5.8
428	Ureteroscopy, Care After	100	10	6.4
427	Vaginal Delivery, Care After	101	10	6.9
426	Chest Pain Observation	102	11	7.3
423	Constipation, Adult	103	10.3	7.9
405	Advance Directive	104	11	8.8
403	Atrial Fibrillation	105	10.7	8.3
401	Chronic Obstructive Pulmonary Disease, Easy-to-Read	106	8	4.5
399	Atrial Fibrillation, Easy-to-Read	107	8	5.3
392	Lumbosacral Strain	108	10.7	7.2
391	Pharyngitis	109	10	6.5
385	Sinusitis, Adult	110	11.3	8
384	Hypertension, Easy-to-Read	111	7.3	5.2
379	General Headache Without Cause	112	8	4.8
375	Smoking Cessation, Tips For Success	113	9	5.8
372	Cesarean Delivery, Care After	114	10.3	6.4
371	Laparoscopic Cholecystectomy	115	11.3	8.3
366	Subdural Hematoma	116	11	7.8
365	Laparoscopic Cholecystectomy, Care After	117	10	6
362	Dehydration, Adult	118	9	6.1
348	Monitored Anesthesia Care	119	11.7	8.6
348	Sternal Fracture	120	10.3	7.7
346	Chest Wall Pain, Easy-to-Read	121	6.7	3.7
344	Shortness of Breath	122	9.3	6.1
343	Back Exercises	123	8.7	6
343	Dizziness	124	9	6.8
341	Foley Catheter Care, Adult, Easy-to-Read	125	7.7	3.8
341	Chronic Back Pain	126	9	7.5
340	Diabetes Mellitus and Food	127	9.7	6.4
339	Smoking, You Can Quit, Easy-to-Read	128	8.7	4.7
334	Depression, Adult	129	11	9.1
317	Gastrointestinal Bleeding	130	9.7	6.8
314	Cough, Adult	131	9	5.6
314	Head Injury, Adult, Easy-to-Read	132	8	4.8

311	Gastritis, Adult	133	10	7.6
310	Abscess, Easy-to-Read	134	8	5.4
310	Abrasion	135	9.3	6.2
308	Hematuria, Adult	136	10	7.6
306	Cervical Collar	137	8.7	5.6
302	Vascular Access for Hemodialysis	138	11.3	7.5
301	Panic Attacks	139	12.3	8.6
296	AV Fistula, Care After	140	9.3	5.7
295	Blood Glucose Monitoring, Adult	141	9	6.4
293	Laceration Care, Adult, Easy-to-Read	142	6	3.2
291	University Urology_Catheter Removal Instructions (Custom)	143	10	6.5
289	PICC Home Guide	144	10.3	5.4
287	How to Avoid Diabetes Problems	145	11.3	8.5
283	Radicular Pain	146	11	8.5
281	DASH Eating Plan	147	9.7	5.6
277	Palpitations	148	10	8.5
168	OB General Instructions (CUSTOM)	149	9	4.9
161	OB Hypertensive Disorders of Pregnancy (CUSTOM)	150	9	5.1

Appendix 4

Oral Exchange Scoring Methods

Question 1. Staff offers everyone help regardless of appearance. The researchers' deduction is as follows. Based on question one and two on the PSSIF, if there is a yes to both put a 3, if both are no put a 1, if one is no put a 2. If on question three there is a no put a 3. If on question four there is a no put a 2, if there is a yes, put a 3. If on question five the ratings are between 1 and 4 put a 1, if ratings are between 5 and 8 put a 2, and if ratings are between 9 and 10 put a 3. The researchers chose these conditions based off the connotations of the individual survey questions and observations presented. In order to receive a 3 rating, the patient should indicate they were greeted and felt welcomed, if asked to fill out a form, they were offered help, and felt the help they received as satisfactory (receiving a 9 or 10 on the Likert scale).

Question 2. Multilingual staff are available to help people. Unless the observer witnesses a multilingual staff or the patient mentions it, this question will receive a one. The researchers established this condition based off the PSSIF not containing a direct question related to the multilingual services.

Question 3. Staff uses sentences that are short, direct, and use plain, everyday words. If on question six on the PSSIF is a yes and question seven has a rating of 9-10, this question receives a 3. The researchers implemented this condition due to whether or not the medical staff explained the medical and technical terms used. If the patients stated yes the doctor explained the terms and they felt satisfied with the explanations, the form receives a 3. If the patients stated the doctor did not explain terms this question receives a 1, unless the patient stated they understood all the terms, to which this question receives a 2.

Question 4. Staff adjusts the pace of their speech when they work with people for whom English is a second language. For this question, unless the researchers observed the staff adjust the pace of the speech this question rated a 2. The rational states how the PSSIF does not contain a direct question to relate, so there is no way of knowing unless observed. Based on previous knowledge of the health care field and working in a diverse population, the researchers could not state this is something that is not done nor that it is something that is done well.

Question 5. Staff check in with patients by asking "Am I being clear?" rather than "Do you understand?" If the patients indicated they asked questions on the PSSIF then this question rates a 2, unless the patient comments how the medical professionals' specific behavior identified this directive.

Question 6. Staff asks patients if they have any questions. If on question eight and nine the patients indicated they did ask questions and they were well received this question rates a 3. Researchers collaborated to determine since the PSSIF did not ask this specific question, but did ask if the patients asked questions then there is similarity in the connotations.

Question 7. Staff uses audio and/or videotapes when such materials are available. Unless the researchers observed or the patient stated these materials were used, this question rates a 1 based on no similar question on the PSSIF.

Question 8. Translation services are available or can be called in with short notice. On every form this question rates a 3 due to the researchers knowledge that translation services is a hospital wide policy.

Part I: Navigation Rating *(continued)*

Please check the ONE response that most accurately describes your hospital or health center today using the following rating scale:

1. This is something that is not done.
2. This is done, but needs some improvements.
3. This is done well.

F. Service and Specialty Areas (Medical Records, Pharmacy, MRI, etc.)

		1	2	3
26.	The name of the clinic/service area is clearly posted	0	0	0
27.	Sign-in procedures are clearly indicated	0	0	0
28.	The doctors' names were displayed at the location	0	0	0
29.	The front desk is visible upon entry to the location	0	0	0
30.	The front desk at location is staffed.	0	0	0
31.	Multilingual signage is available at the location.	0	0	0

Part 4: Technology Rating

Please check the ONE response that most accurately describes the current technology your hospital or health center uses, using the following rating scale:

1. **This is something that is not done.**
2. **This is done, but needs some improvements.**
3. **This is done well.**

Technology	1	2	3
Televisions			
1. Televisions are available to patients in one or more locations (i.e., waiting areas, testing sites, pharmacy).	D	D	D
2. Televisions can deliver digital health information videos	D	D	D
3. Televisions are used for orientation purposes.	D	D	D
4. Televisions are used for educational purposes.	D	D	D
Telephones			
5. House telephones are available to patients in one or more locations (i.e., hallways, waiting areas, testing sites, pharmacy).	D	D	D
6. House telephones offer directions to people throughout the facility.	D	D	D
7. House telephones offer links to translation services.	D	D	D
Computers			
8. Computers are available to patients in one or more locations (i.e., waiting areas, testing sites, pharmacy, resource rooms).	D	D	D
9. Computers have capacity for educational purposes.	D	D	D
10. Computers have internet connection	D	D	D
11. Computers have access to social media.	D	D	D
12. Computers have headsets connected to them.	D	D	D
13. Exam rooms have computers where providers can show patients parts of their electronic medical records.	D	D	D
14. Providers can print out specific patient education	D	D	D
Patient Engagement			
15. Patients can access their test results online	D	D	D
16. Patients can access their prescription history online (i.e., patient portal).			
17. Patients can request health information from the room.	D	D	D
18. Patients can request "video chat" from their rooms	D	D	D