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**Development and Implementation of a Health Literacy Program in a
Community Primary Care Clinic in Houston, Texas**

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**Development and Implementation of a Health Literacy Program in a
Community Primary Care Clinic in Houston, Texas**

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Dedication

I dedicate this capstone to my husband, Chuck. His patience, kindness, and understanding create the pillar of my strength. Also, I dedicate this to my mother, Michelle, for her unwavering support and committee throughout my life.

Acknowledgement

I would like to thank the MPH program director, Dr. Christine Arcari, for her guidance throughout the MPH and capstone process. I give special thanks to the support from my capstone committee. I would also like to thank the HOPE Clinic Chief Executive Director Andrea Caracostis and all the HOPE Clinic staff that assisted with medical translation and pre-testing.

Development and Implementation of a Health Literacy Program in a Community Primary Care Clinic in Houston, Texas

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Literacy is the way in which our society is able to express ideas and have them understood by others. Without literacy, and particularly health literacy, individuals cannot become full participants in managing their own health and wellness. In the United States, 37% of the population has basic or below basic health literacy¹. A person is more likely to have basic or below basic health literacy if they did not graduate from high school, did not speak English at home before starting school, are Black or Hispanic, are older than 65, or have multiple disabilities¹. The HOPE Clinic has an ethnically diverse and unique population that has many of these risks for having low health literacy. The descriptive statistics obtained for this project indicated that 45% of the population requires translation assistance. The clinic has a well trained staff that is fluent in the majority of the languages encountered in the clinic; the most common are Spanish, Chinese, and Vietnamese. However, there are minimal written resources available for the patients to take away from the clinic encounter. Hypertension was found to a medical issue for 11% of the patient population. Evidence based information about the diagnosis, treatment, and morbidity associated with hypertension were provided in the form of educational material that were created following plain language guidelines, without the requirement of

specialized computing software. The educational material was developed in English then translated into Spanish, Chinese, and Vietnamese to reflect the most commonly spoken languages in the clinic that also most frequently requested language translation assistance. The material was pre-screened by a small number of the patients to ensure that the material was culturally and linguistically appropriate as well as beneficial to patients. Additionally, a presentation was made to the health care providers to provide information about how to continue to develop and use plain language material. Health literacy cannot be improved through one modality alone; however the combination of health care provider education, written educational material, and audiovisual information can together make an impact. If the hypertension educational material produced in this project is able to improve the health literacy of the individuals, this could be expanded to other health related issues in print or audiovisual formats in the future.

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List of Commonly Used Abbreviations

AAHC – Asian American Health Coalition

CHF – Congestive heart failure

CKD – Chronic kidney disease

CVA – Cerebral vascular accident

DASH – Dietary approach to stop hypertension

EMR – Electronic medical records

ESRD – End stage renal disease

HBV – Hepatitis B Virus

HOPE Clinic – Helping Other People through Encouragement Clinic

HTN - Hypertension

IOM – Institute of Medicine

IT – Information technology

JNC7 - Seventh Report of the Joint National Committee

NAAL – National Assessment of Adult Literacy

NAMCS – National Ambulatory Medical Care Survey

NCI – National Cancer Institute

NHLBI – National Heart, Lung and Blood Institute

ODPHP – Office of Disease Prevention and Health Promotion

WWE – Well Woman Exam

Chapter 1: Introduction

1.1 Aim and Objectives

The aim of this master's of public health degree capstone project was to develop and implement a health literacy program in a Houston community clinic. There were three objectives for this project. The first was to obtain insight into the demographic profile and needs of the patient population by conducting target audience research for the HOPE clinic. The clinic provides care for multiple cultural and ethnic groups with a diverse spectrum of health knowledge. The project was able to provide health care information to those most in need of assistance, through increased understanding of the unique composition of primary languages, cultural and ethnic groups. The second objective was to develop multilingual health education material that was appropriate for the clinic population. The health topic chosen for the pilot project was about hypertension, which was determined through analysis of the most commonly discussed health issues documented to occur between the health providers and patients. The pilot educational material was translated by HOPE Clinic staff and was screened by a small number of clinic patients. Patient feedback of the educational material enabled alterations of the material to enhance readability and understanding. For the final objective, a short pamphlet was created to be used by health providers to assist with the development of future low literacy health material.

Chapter 2: Background

2.1 Literacy

Literacy, or being literate, is strictly applied to the ability to read and write². However, with increasing world-wide access to internet, television, radio, and publications, the definition is evolving. A specific subset of literacy is called health literacy, which is more complex than general literacy, as it requires “basic literacy, numeracy and health knowledge”³. Health literacy is defined as “the ability to understand health information and to use that information to make good decisions about health and medical care”, according to the National Library of Medicine⁴.

In the United States, literacy levels are evaluated by the National Assessment of Adult Literacy (NAAL)¹. The most recent survey in 2003 indicated that 93 million Americans have only basic or below basic literacy¹. In addition to skills required for literacy, health literacy requires increased ability to understand and assimilate complex issues¹. For the first time the NAAL 2003 survey provided information specifically about health literacy¹. An estimated 36% of the population have basic or below basic health literacy¹. The survey found that within subpopulations this percentage was higher, including those who do not graduate from high school, do not speak English in the home before attending school, are from Black or Hispanic racial or ethnic backgrounds, are older than 65 or have multiple disabilities¹.

The NAAL survey also provides state and county specific literacy information⁵. This capstone project will particularly serve the needs of the HOPE (Helping Other People through Encouragement) Clinic, located in Harris County. In Harris County, approximately 21% of the total population or 544,000 persons lack basic literacy skills⁵.

Attempts to improve national health literacy are being actively implemented at the national and state levels^{6,7}. Healthy People 2020 includes the “use of health communication strategies...to improve population health outcomes and health quality, and to achieve health equity” as a major objective⁷. Multiple national institutions including the Institute of Medicine (IOM), National Cancer Institute (NCI), and Office of Disease Prevention and Health Promotion (ODPHP) have created comprehensive resources to assist with development of effective health communication and literacy programs^{3,8,9,10}.

2.2 Plain Language

Plain language is the presentation of information that fulfills the needs of a specific audience. At the national and state level, government agencies are required to create plain language material⁶. Many assume that plain language materials are used to “dumb down” information, however when created for a specific target audience, the information becomes meaningful¹¹. Through the use of language tailored to a specific target audience the material allows those persons to “find what they need, understand what they find; and use what they find to meet their needs”¹¹. Plain language is a methodical approach that takes complicated or foreign ideas and refines them to an audience-specific and reader-friendly format^{3,8,11,12}. Incorporating plain language into health educational material enables improved health literacy within any target population. Increased health literacy should empower individuals to learn about their health and become more active in health related decisions⁷.

2.3 Educational Material and Decision Aides

The focus of this capstone was the creation of educational materials that were developed using plain language guidelines. Health education material may provide information about prevention, pathogenesis, diagnosis, and treatment of health conditions¹³. This differs from decision aides, which “prepare clients to participate in making specific and deliberate choices among healthcare options”¹³. Educational materials were chosen for creation for this capstone, as standardized information is available for the medical issue of interest. Decision aides would be preferred if there were multiple potential treatment options to consider.

There are no standardized guidelines influencing the development of decision aides and educational material. Increased federal and state interest in plain language material has led to the creation of several resources to assist with development of health literacy information¹⁴. However, these resources are not uniformly utilized, leading to wide variability in content, readability, appearance, and cultural appropriateness^{3,8, 9,10,11,12,14}. Due to the variability of written health education material there is limited ability to generalize its clinical importance. Nevertheless, both decision aides and educational materials have been shown to improve communication and conversation between the patient and the health care provider^{15,16,17,18,19}. These aides facilitate discussions with the providers, and they help patients increase their understanding and acceptance of a particular health condition^{19,20,21,22,23,24,25}. However, regardless of their ability to improve knowledge, health education materials and decision aides are both supplementary options used in conjunction with discussion with the health care providers¹³.

2.4 HOPE Clinic

In 1994, a non-profit organization called the Asian American Health Coalition (AAHC) was developed to help recognize and reduce health disparities in Asian American communities²⁶. Through efforts of the AAHC, the HOPE Clinic was founded. The clinic is located in Southwest Houston, specifically serving the medically underserved population. The HOPE Clinic has a unique patient population not only when compared to the surrounding area of Harris County but also in comparison to the state of Texas and the United States population in general (Figure 1)²⁶.

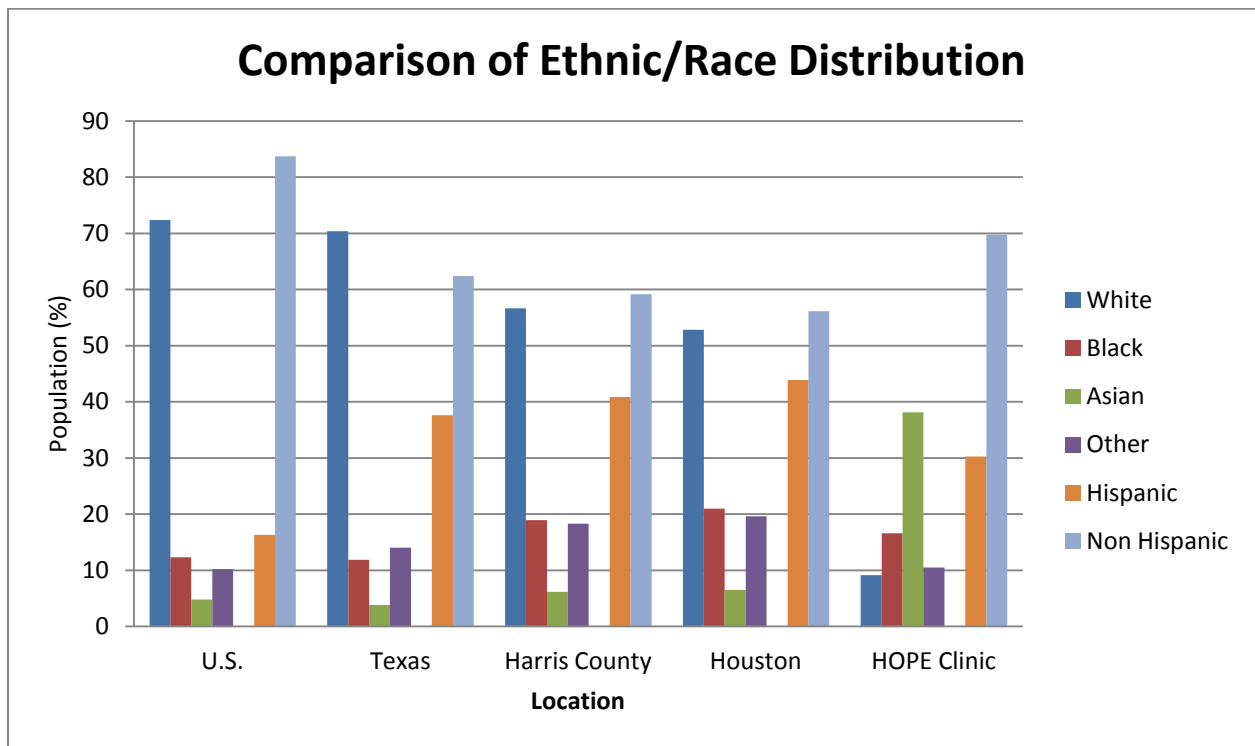


Figure 1. A graphic comparison between the U.S., Texas, Harris County, Houston, and the HOPE Clinic populations for ethnic/race distributions. Adapted from U.S. Census 2010^{26,27}

According to the HOPE Clinic demographics, the population is 40.6% Asian, 35% Hispanic, 9% Caucasian, 12.1% African American, 0.6% Pacific Islander, and 0.3% Native

American²⁶. There is no further break down of the HOPE Clinic subpopulations currently available. The diversity in the clinic population's culture is subsequently reflected in a myriad of languages spoken fluently within the clinic. Languages spoken on a daily basis between staff and patients are English, Spanish, Vietnamese, Chinese (Mandarin and Cantonese), Korean, Arabic, Burmese, and Hindi/Urdu/Punjabi²⁶.

Initially, the clinic was open part-time and primarily staffed by volunteers. Now the clinic is staffed for full-time operation, with an internist, obstetrician/gynecologist, pediatrician, two part time family medicine physicians, and a part-time nurse practitioner²⁶. The clinic has over 30 carefully chosen staff members who are fluent in the most commonly encountered languages²⁶. These staff members provide translation assistance to the clinicians, thus minimizing language barriers in the pursuit of providing health care and understanding.

Chapter 3: Data and Methods

Low literacy material goes beyond decreasing the reading level by providing evidence-based health information in a comprehensible format. There are eight major categories that should be analyzed to maximize readability and comprehension, including research of the target audience, pre-determined target message, clear plan of action, appropriate word and syntax choice, presentation, appropriate use of visuals, and translation^{3,8,9,12,28}. This capstone includes a descriptive analysis of the current HOPE clinic population in terms of diversity, languages, and clinical concerns. Descriptive analysis provides insight into the target audience and what messages will be the most important to the population. Following a needs assessment for the clinic, educational material was developed about hypertension. The educational material was then reviewed by clinic staff and translated by the HOPE Clinic staff. Following translation the material was screened by members of the target population. Additionally, educational material about health literacy was developed and presented to the healthcare providers to create a foundation for further development of improved health literacy in the target population.

3.1 Target Audience Research

The first component of the capstone involved descriptive analysis of a sample population from the HOPE Clinic. The HOPE Clinic is unique compared to the surrounding Houston area. Thus assuming that the clinic's population has the same health concerns would be faulty. Therefore, determination of the most commonly addressed issues within the clinic was pertinent. Based on 2010 information, the HOPE Clinic cared for approximately 8,000 patients accounting

for 10,000 visits per year²⁶. Of these, approximately 2,000 individual patients were under 18 years of age²⁶. Prenatal care and obstetrics patients are managed in combination by the obstetrician/gynecologist and the family medicine physicians. Approximately 5,000 individual adult, non-obstetric patients were seen by clinicians at HOPE Clinic each year²⁶.

For this health literacy project, the HOPE clinic population was narrowed to exclude persons under the age of 18 and those coming to clinic exclusively for obstetric related visits. The majority of the adult health care is provided by the family medicines physicians, the internist, and the nurse practitioner. The electronic medical record (EMR) system used within the clinic is Sevocity, which was implemented in April 2009. The format of notes and data has been adapted by the clinic's medical director to improve uniformity of note appearance and location of information.

The Sevocity EMR system encounters were reviewed starting in September of 2011. To establish a trend about what the most commonly complains in the clinic were, the charts of ten percent of the population, or approximately 500 patients were analyzed. During the process, EMR identification numbers were recorded to track actual numbers of patients. These identification numbers were then deleted once duplicates were removed. Review of Sevocity from September 1, 2011 to October 11, 2011, included 587 encounters representing 521 individual patients. The encounters of the two family medicine practitioners and one internal medicine practitioner were the only charts reviewed. The nurse practitioner did not see any patients during this time period. The obstetrician/gynecologist saw primarily obstetric patients and women for well woman examinations, patients with more complicated medical issues were referred to the other clinicians, and therefore these patients were excluded.

The data recorded about these encounters included age, sex, race, language, need for translation assistance, and reason(s) for the office encounter. The first components, age and sex, was objective information available in the subheading of each chart. Race or ethnicity, language and need for translation assistance were found on the registration forms. These forms are given to all patients at their first clinic encounter and were scanned into the Sevocity EMR system. The forms were completed by the patient individually, or with assistance from staff speaking their preferred language. The patients choose from multiple of racial and ethnic group options, or may choose “other”. The patients select their primary spoken language(s). Finally, the patient may check a box on the form if translation assistance was required. When recording the information, each preference was entered into excel if the information was not completed it was recorded as not reported. Each office encounter was entered into Sevocity by the clinicians in a relatively standard note structure. At the conclusion of each encounter the clinician chose billing codes and then provided specific plans associated with each of these codes. The ICD codes were not used to determine the main reason for encounter, as there were often multiple ICD codes chosen that were not addressed in the assessment and plan component of the practitioner’s note. Rather, the reason(s) for each encounter that were documented in the assessment and plan section by the practitioner were utilized. Generally, the clinician only elaborates on the reason(s) for the encounter that were the most important and discussed during the visit. All complaints and counseling items for the visit were accounted for during each patient encounter.

3.2 Development of Patient Education Material

There have been previous national efforts to create standard methods in creating low literacy, plain language material^{3,6,8,9,10,11,12,28}. Most of these endeavors targeted government and national organizations and are not utilized routinely at the clinic level^{6,11}. This capstone project aimed to reduce the knowledge gap through the creation of educational material uniquely created for the HOPE Clinic. After establishing the diversity of the target population and the specific needs of the clinic, appropriate educational material was created that would most benefit the HOPE Clinic.

The educational material was tailored toward the race/ethnic groups requiring the most language assistance, as language barriers are a common cause of poor health literacy^{1,3}. Internet accessible educational material is most often available in English or Spanish. Due to the unique predominance of Asian minority groups, the HOPE Clinic has obtained many resources for diseases of uniquely high prevalence within this group such as hepatitis B virus (HBV) in multiple languages. Additionally, the HOPE Clinic has the ability to share folders between all the computers in the clinic, which enables easy access and sharing of educational material between clinicians. Currently, several clinicians have utilized the shared folders, which contain some educational material in English, Spanish, and simplified and traditional Chinese. As these educational materials are each created by individual clinicians in the group, the formatting and information presented is highly variable. The majority of education that occurs in the HOPE clinic depends upon the assistance of translators, as linguistically appropriate written information is not readily available. Since the clinic serves a population where most do not speak English as a primary language, creating a series of multi-lingual materials is an asset.

The next step towards creation of educational material was to pre-determine the message of interest. To provide the most impact with the pilot project, determining what the patients were most commonly discussing with their health care provider was important. The written material concisely and completely discussed the diagnosis, monitoring, treatment, and prognosis of the most common complaint. Each handout was created to present limited information, with less than three messages per handout, about a component of the medical issue^{3,12}. Several handouts were created that could be provided in series to allow a gradual increase in information^{3,12}. Once the target message was determined it was developed into a format that was easy to read both visually and intellectually^{3,8,9,12}.

For the low literacy population, the messages were presented frequently using concrete, manageable steps^{3,8,12,28}. Concrete information can be literally followed to reach the message's goal. A concrete, rather than an abstract message, provided the low literacy learner tangible tasks that can be tracked. Additionally, the message limited tasks that focused on avoidance, such as not being able to eat certain foods or participate in certain activities¹². Rather the message provided mostly positive messages that enabled specific actions to be taken¹². The focus on the positive aspects of change presents the reader with tasks that can be completed, rather than tasks to be avoided.

The wording of the message significantly impacted how the information was interpreted by the target audience^{8,12}. A plain language message provides evidence-based information that allows comprehension without altering the meaning of the material^{3,6}. When developing the plain language messages the tone and word choice was carefully considered. The messages were presented in an active, conversational tone^{8,12}. This conversational tone was selectively enhanced through the use of questions, which engage the patient by requiring active

consideration about how the message directly applied to their own medical condition³. Language is complicated; there are many concepts that can be conveyed by a variety of words and many words that may have multiple meanings. When practical the educational material utilized the vernacular of the target population, rather than literal translation^{8,12}. Generally, common language minimizes the use of multi-syllable words, thus this was incorporated into the educational material through the concerted use of one or two syllable words¹². Language can be significantly complicated through the use of medical and scientific jargon, acronyms and abbreviations, and statistics¹². When these complicating elements could not be avoided, a complete plain language explanation was provided¹². The educational materials were reviewed by multiple individuals to ensure that they were free of spelling and grammatical errors, and that the same tense was used throughout¹².

In conjunction with careful word choice, the syntax of the message is equally important as this dictates the rhythm and flow of the information. The educational material was divided and arranged to create a logical sequence^{3,8,28}. To avoid overwhelming a low literacy reader the information was divided into headings and subheadings that were limited to three to seven statements^{3,8,12}. The sentences were limited to five to seven words when possible, and were often presented with the use of bullets or concise paragraphs containing three to five sentences^{3,8,12}. Overly long sentences interrupt the flow of the message and can be difficult for a low literacy reader to comprehend¹². Finally, the lengths of lines were limited to 30 to 40 characters, which was accomplished through the use of columns³. These parameters for syntax allowed the low literacy reader to follow the information more easily thus enhancing readability and comprehension.

Once the words and sentences for the message were written, the readability of the information was further enhanced through the appropriate use of font and spacing. When considering font, the size, style, and accents were important to consider. The font size was at least 12 to 14, with the heading being 2 points larger than the text^{3,8,12}. When choosing the font style, scripted or fancy fonts were avoided and the chosen font contained serifs, or “little feet”, which helped separate the individual letters^{3,12}. Words or messages of particular importance were highlighted, several visual techniques were considered including color, style accents, and capitalization. For this project, color was minimized as the clinic uses black and white printers, and thus contrast rather than color was more important. However, when color is available it can be used to highlight important concepts, with avoidance of yellow and light colors on a dark background which diminish readability^{8,12,28}. Additionally, while not used in this project using bold and limited amounts of underlining could be useful to accent information, however italics should never be used^{3,12}. The final highlighting technique was avoidance of the use of fully capitalized words, and appropriate use of a combination of upper- and lower-case words^{3,8,12}.

The use of spacing and incorporation of white space into the material enhances the ability to read the message. The material did not contain justified sentences, as this would alter the spacing between words making them difficult to read¹². Finally, approximately 10-35% of the page was reserved for white or free space¹². This was accomplished through the use of one-half to one inch of space between all margins and neighboring columns¹². Additionally, more space was maintained above a heading or subheading than below, thus increasing white space and providing a visual connection between the heading and the material¹². Together the font and spacing allow a low literate reader to more easily read and assimilate the presented information.

Low literacy material should use appropriate visuals, either to enhance written messages or to create stand alone messages in the form of pictograms^{3,8,12,28}. As this was a pilot project, this provided the correct small scale to pre-screen the images for cultural appropriateness and relevance^{8,9,12}. Similar to the written messages, the visuals provided a single, clear, concrete message¹². The visuals were located near to the associated written message, and when needed were accompanied by a concise description to reinforce the message^{8,12}. For this project the included images were real, and obtained from sites that permit use without copyright violation. However, engineered images are also appropriate, and the choice depends on the intended message. Real life images are able to convey emotion, while simple illustrations are better equipped to illustrate complex concepts or procedures^{8,12}. If an illustration depicting minute or abstract information is used, it should be provided in context with images that give a perception of size, detail, and location¹². Visuals are important to the low literacy reader because they reinforce key concepts and when appropriately chosen are easy to understand.

The final component for the development of low literacy material is to consider if the material should be translated into other languages. The unique ethnic/racial composition of the HOPE clinic required that the educational material be available in multiple languages. Translation was a difficult component as the message may be lost due to both technical and cultural errors. Technical errors were minimized through the careful choice of translator, avoidance of literal translation, and back translation¹². For this capstone two options were considered for translation, which were the use of hired professional translators or the use of HOPE Clinic staff. Each option was considered in terms of financial cost, time resources, staff availability and fidelity of translation. Financial cost would apply only to a hired professional translator, where the average cost was \$0.13-0.15 per word plus the cost of actual translation²⁹.

Time constraints and staff availability are serious consideration at the HOPE Clinic. Much of the staff has multiple obligations which limited their ability to dedicate time to translation of educational materials for this project. With the hired professional translators, estimated time to translate small documents was two to seven days²⁹. Finally, as mentioned previously technical errors in translation can cause serious issues, therefore the information should be translated to appropriately reflect the desired message. Clinical staff may or may not have the ability to fully understand technical components of the health educational material, and this could have led to imprecise translation. Hired professional translators would provide accurate translation, however there would be concern about cultural appropriateness that a HOPE clinic staff translator would be more able to integrate. Cultural errors in translation are more difficult to mitigate, as there is variation in values, belief and culture even within similar racial/ethnic groups¹². To minimize cultural errors the educational material was screened in the translated language by patients in the target population^{3,9,12}. The translation options were presented to the HOPE Clinic CEO and clinic practitioners. For the purposes of this capstone, utilizing clinic staff for translation was determined to be the most appropriate both in terms of financial cost savings and concerns about cultural sensitivity.

Initially, the educational materials were developed in English following the guidelines presented previously. These materials were reviewed by the healthcare practitioners for content. Once the material was finalized in English, clinical staff members translated the material into the most common primary languages of the clinic requesting translation assistance. These translations were then provided to other members of the clinic staff fluent in the language to obtain feedback on content and appropriateness of the translations. The translated content was combined with the English content. Maintaining the English translation served two purposes.

First, many patients have emigrated to the U.S. and live with family members that can no longer read the patient's primary language. Therefore, keeping information in both languages will allow better dissemination of information within a family. Secondly, the patient could take these materials to other health care personnel and the information could be further discussed. Once the two languages were together, visuals were added as spaced allowed that were reviewed by the healthcare practitioners and clinical staff before being pre-tested with the target audience.

Prior to inclusion in the clinic's resource lists, the educational material were screened by a sample of the target population. Screening may occur through the use of either individual or group interviews, with a goal of five to ten people per educational hand-out per language⁸. In the HOPE clinic, due to time and financial constraints, the utilized modality was a convenience sampling of individual patients from the target populations. The individuals were asked to provide feedback about the material through the use of standardized, open-ended questions; no identifiers were collected. These questions covered ease of reading and format, usefulness of the material to understanding their health condition, and suggestions for changing the information to be more beneficial.

3.3 Development of the Health Care Provider Educational Template

There were multiple resources available to assist with development of health communication programs that could be applied in a clinical setting^{3,8,9,12}. The resources were excellent for programs with the capacity to have individuals dedicated to implementing health literacy programs. However, sorting through these resources may not be attractive to a busy clinician with minimal time to spare. Multiple communication program guides were reviewed^{3,8,}

^{9,12}. The information from these resources was combined and simplified to create a short guide that could be referenced quickly. The guide was formally presented to the healthcare practitioners and staff, which provided information about available resources and enabled discussion about health literacy within the medical practice. This guide will enable clinicians to create customized information material for their specific needs that follow an evidence-based model for creating low-literacy material without the need of specialized software or personnel.

Chapter 4: Results

4.1 HOPE Clinic Target Audience Research

The first stage of the capstone was to obtain information about the target population. This information was obtained from chart review of the Sevocity EMR. Of interest to this project was demographic data and information about why the encounter occurred and counseling that occurred during those encounters. The demographic data included general information about sex, age, and race/ethnicity, with additional interest in languages spoken and request for translation assistance. The information about the clinical encounter was documented by the health care provider following a standardized template.

The demographic data provided information about sex, average age, and race/ethnic groups which was important in ensuring that the educational material and visuals represented the target population. The sample population included 521 individuals that were seen in the clinic from September 1, 2011 to October 11, 2011. The sample population was 74% female and 26% male. The median age was 44, with males' median age was 47 and females' median age was 44 (Figure 2).

At the first encounter patients complete registration material that allowed voluntary selection of 19 self-identified racial/ethnic group(s). 22.7% did not respond or chose "other". Of the remaining, the most common racial/ethnic groups were Latino/Hispanic (30.9%), Chinese (12.7%) and Vietnamese (11.0%) (Figure 3). The distribution obtained from this sample population, closely mirrored the distribution of the 2010 data obtained for the entire HOPE Clinic population²⁶.

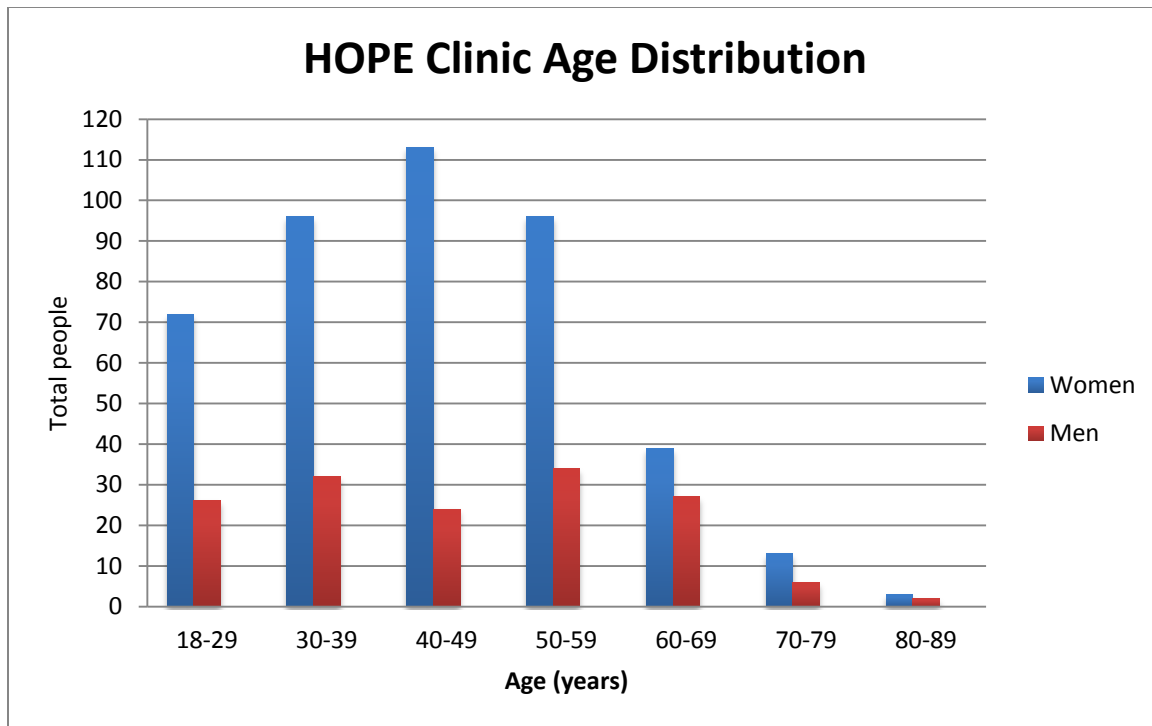


Figure 2. Age distribution comparison between men and women for adults (age > 18 years) for the HOPE Clinic sample population.

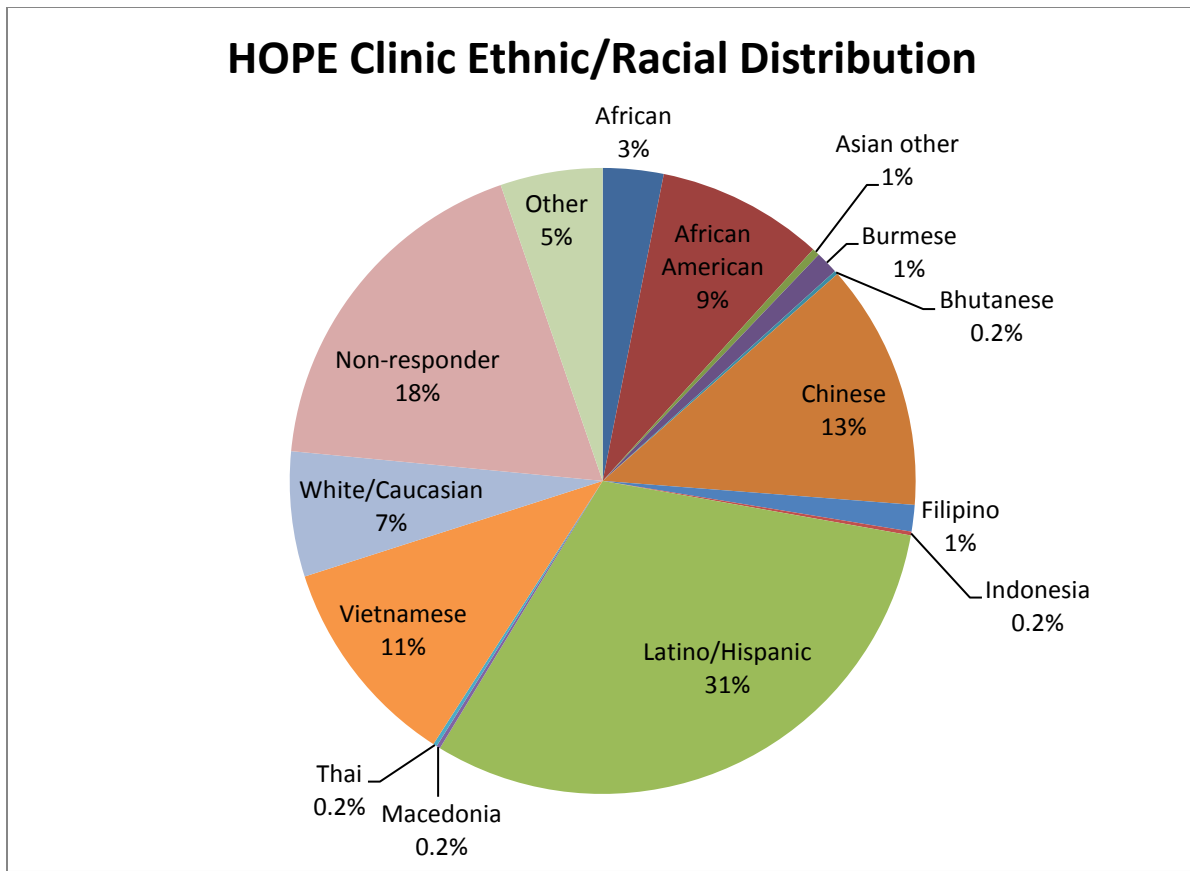


Figure 3. Ethnic/racial composition of the HOPE Clinic sample population.

Additionally at the first encounter the patient was asked to self-identify a primary language spoken and if translation assistance was required. In this sample population, 21 primary languages were identified with approximately 45% of the population requesting translation assistance (Figure 4). Within each language the percentage requesting a translator was identified (Figure 5). To determine which languages would have the largest audience, the percentage requesting translation was weighted by the number of individuals requesting the service. Therefore, certain groups (i.e. Burmese) had nearly 100% need for translation assistance; however the small numbers of individuals in these group decreased the overall need within the clinic. The top three languages requiring translation assistance overall were Spanish (42%), Vietnamese (18%), and Chinese (Cantonese 10% & Mandarin 9%) (Figure 5).

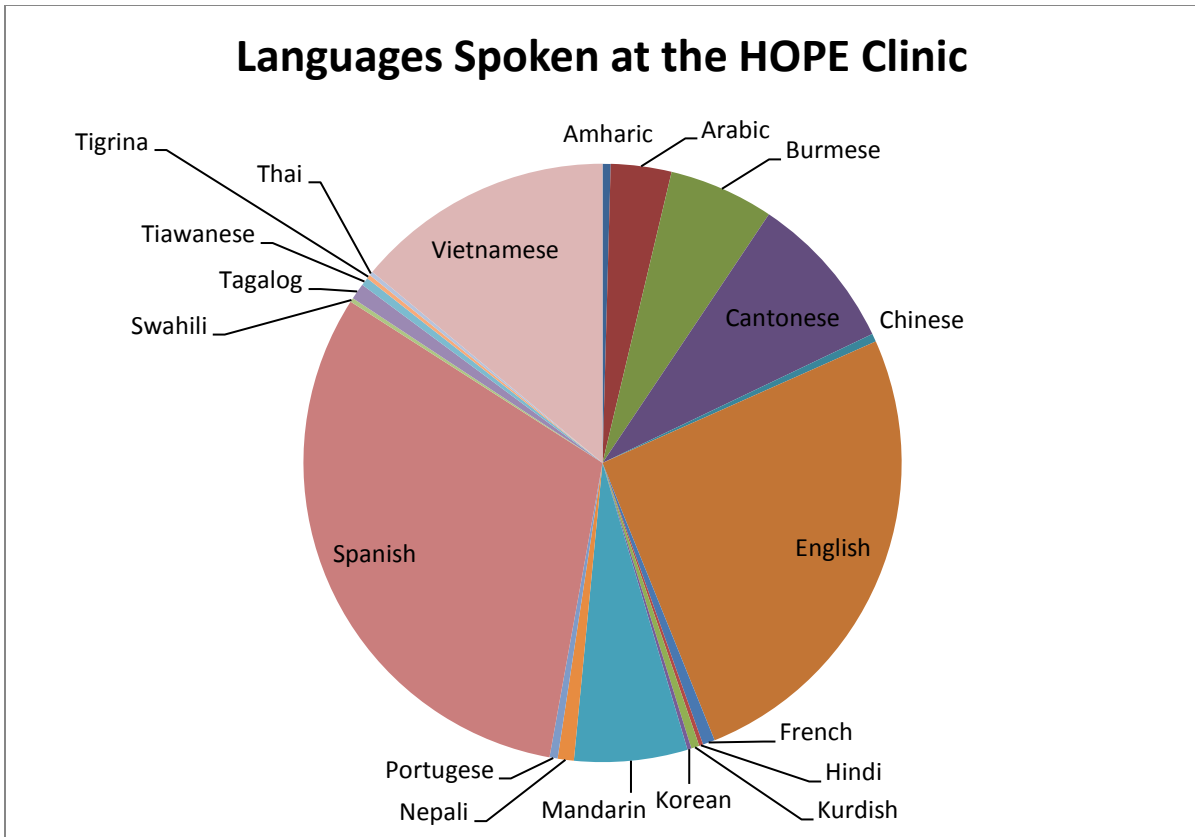


Figure 4. Primary languages reported in the registration paperwork by the sample population at the HOPE Clinic.

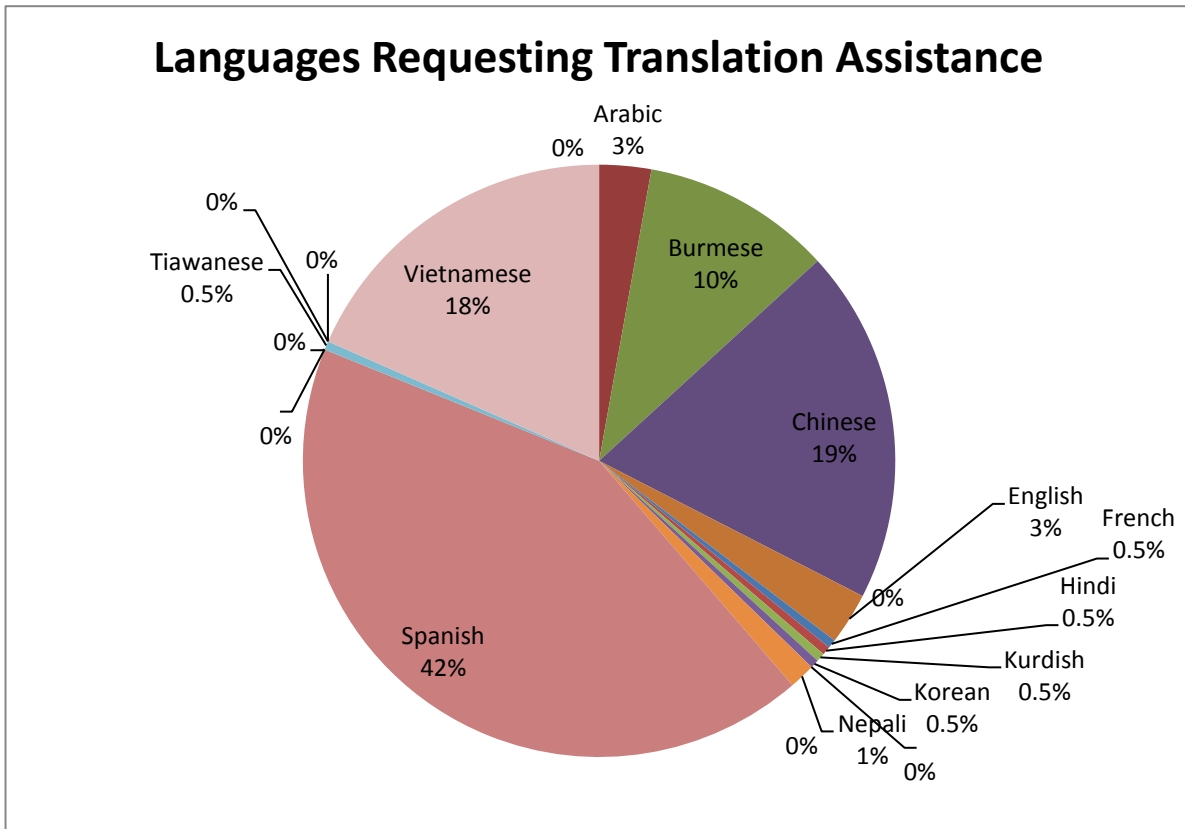


Figure 5. HOPE Clinic sample population requesting translation assistance by primary language reported.

Within the EMR note the health care provider documented the issues addressed and the plan of care. Due to the differences in the population composition of the HOPE Clinic compared to the Houston, Texas, and United States populations, gaining insight into the most commonly addressed issues in the encounter had the potential to be unique. Additionally, determining the most common issues encountered enabled the creation of resources that will be most frequently utilized. In this sample population 119 diseases or issues were documented, with most visits discussing multiple issues. The most common issue addressed in the clinic overall was hypertension (HTN), representing 11% of total diseases or issues (Table 1). Among women, well woman exams (WWE) were the most common encounter, with HTN being the second most

common clinical encounter (Table 1). HTN is the most common reason for office visits across the U.S. in those older than 45 years³⁰. The National Ambulatory Medical Care Survey (NAMCS) found that office visits for HTN accounted for approximately 6% of visits for those 45-64 years and 8% of visits for those > 65 years of age³¹.

Combined		Men		Women	
HTN	138	HTN	42	WWE	106
WWE	107	DM	24	HTN	96
DM	92	HBV	20	DM	68
HLD	76	HLD	17	HLD	59
HBV	55	Back Pain	16	HBV	35
GERD	39	Tobacco	14	Joint Point	33
Back Pain	39	GERD	11	GERD	28
Joint Pin	39	Obesity	9	Back Pain	23
Obesity	31	Immunization	8	Obesity	22
Allergies	27	Allergies	8	Hypothyroid	21

Table 1: Most common complaint for HOPE Clinic sample population, stratified by sex.

However, the above data created an overall composite of the entire clinic. Among those individuals with HTN, 30.2% were male and 69.8% were female. Additionally, for those with HTN the average age was 54 years, with the average for males being 55 years and for females being 53.6 years. The information was further examined to determine if HTN was a true issue for the most common racial/ethnic groups. The most common racial/ethnic groups in the clinic

were also seen in the largest numbers for HTN (Table 6).

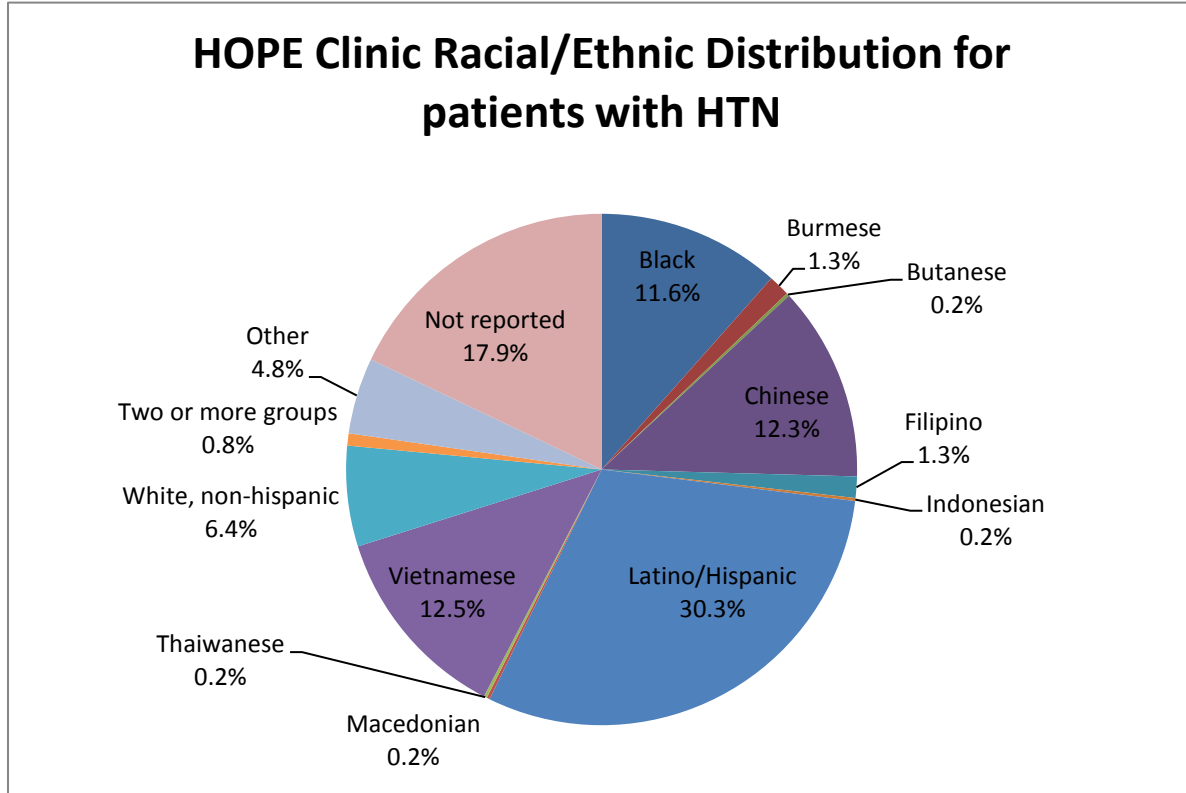


Figure 6. The racial/ethnic profile of the sample population that are seen for hypertension.

4.2 Pilot Education Material: Hypertension

Determining the demographics and health needs of the HOPE Clinic population enabled the creation of a pilot project that was narrow in scope, but with a potentially broad impact. The most commonly encountered complaint was HTN. The languages that most requested translation assistance were Spanish, Vietnamese, and Chinese (Mandarin and Cantonese). Thus, the pilot project focused on the development of educational material about HTN that was made available in Spanish, Vietnamese, and simple Chinese. The material was also accompanied by

the English equivalent, so that patients from multi-generational families may involve all members that are unable to read or speak the patients preferred language proficiently. HTN is an extremely broad topic; therefore multiple educational aides were created to cover basic information about important aspects of the disease. The educational material provided introduction about the definition, diagnosis, treatment, and associated morbidity and mortality concerns associated with HTN.

HTN is a serious, chronic, non-communicable, multi-factorial disease that is increasing in prevalence. Prevalence increases with age; by the age of 65 an estimated 50% of the population will be diagnosed with HTN³². At the HOPE clinic, 11% of all visits concern HTN, which is similar to the 6-8% of visits nationwide³¹.

The definition of HTN evolves with improved understanding of human physiology. The definition of HTN has been established by the National Heart, Lung and Blood Institute (NHLBI), and is reported in the “Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure” (JNC 7)³³. These guidelines provide a framework about what the definition of hypertension ought to be, the treatment options, and the goal of therapy. JNC7 has created four categories of blood pressure: normal, pre-hypertension, stage 1 hypertension, and stage 2 hypertension (Table 2)³³. To be diagnosed with HTN, the blood pressure must be elevated on two separate encounters³³. Establishing which blood pressure classification an individual belongs to enables the creation of a tailored treatment program.

Blood Pressure Classification	Systolic Blood Pressure (mmHg)	Diastolic Blood Pressure (mmHg)
Normal	<120	and <80
Pre-hypertension	120-139	or 80-89
Stage 1 Hypertension	140-159	or 90-99
Stage 2 Hypertension	>/ 160	or >/100

Table 2: Diagnostic criteria for HTN. Adapted from: JNC 7.³³

The treatment of HTN follows a multi-modal approach through lifestyle changes and medication. Lifestyle changes should always be a component of therapy, which is frequently overlooked as these changes are not as easy to follow as taking medication. Lifestyle changes include implementation of regular exercise, dietary changes and weight loss. Exercise recommendations to lower blood pressure include one to two hours per week of moderate to high intensity aerobic exercise and one to two days per week of resistance training^{34, 35, 36}. The DASH (dietary approach to stop hypertension) diet is currently recommended, as it incorporates increased fiber, increased whole grains, four to six servings of fruits and vegetables, low fat milk products and limited amounts of lean meat and protein^{33, 37, 38}. Further dietary improvement is obtained through limiting salt intake; the current amount recommended varies between 1500 to 2400 mg per day^{33, 38, 39, 40}. The final dietary component is adherence to low alcohol intake if the patient already consumes alcohol, with a limit of one drink for women and two drinks for men per day^{33, 41}. Weight loss should be encouraged; even small changes in weight can have an

impact on blood pressures³³. When lifestyle changes fail or the blood pressure is either stage 1 or especially stage 2 HTN, medications are a necessary component of therapy³³. There are seven broad classes of commonly used anti-hypertensive medication that each serve a specific purpose both individually and in combination³³. In depth discussion of drug therapy is outside the scope of this capstone project.

As this pilot project is creating educational material for assistance in understanding the diagnosis of HTN, providing information about why the patient should be encouraged to control their blood pressure is important. Hypertension has been shown to be independently associated with increased morbidity and mortality, especially in regards to premature cardiovascular disease, congestive heart failure (CHF), cerebrovascular accident (CVA, or stroke), chronic kidney disease (CKD) and end-stage renal disease (ESRD, or renal failure)^{30, 42, 43, 44, 45}.

Cardiovascular disease is becoming increasingly common, as this disease is associated with diabetes, hyperlipidemia, advanced age (>60 years), male sex, history of smoking, and HTN⁴². While certain factors, such as diabetes, are more strongly associated with cardiovascular disease, the higher prevalence of HTN in the population makes this the most common association with premature cardiovascular disease⁴².

CHF may be due to diastolic or systolic dysfunction³⁰. Diastolic dysfunction develops as the heart muscle becomes stiff, and is unable to appropriately relax to allow the heart to fill with blood²⁹. Systolic dysfunction occurs when increased peripheral vascular resistance leads to ventricular hypertrophy⁴³. Left ventricular hypertrophy has been shown to be independently associated with all-cause mortality⁴³. Initially, the heart is able to compensate for these changes with alterations in stroke volume and heart rate⁴³. However, eventually the physiological

changes are inadequate to move blood forward, and evidence of fluid overload develops⁴³.

Those with advanced heart failure require multi-drug therapy, strict dietary compliance and frequent hospitalization even in patients that are compliant with therapy.

CVA is significantly associated with suboptimal control of hypertension. With optimal control of blood pressure the risk of all strokes is reduced by 42% and the risk of fatal strokes decreases by 45%⁴⁴.

One of the leading causes of CKD and eventually ESRD is suboptimal control of HTN. The association between blood pressure and ESRD has been found to be independent of age, sex, race, or other medical conditions⁴⁵.

This evidence-based information about the diagnosis, treatment, and morbidity associated with HTN was organized into a six sheet series of educational materials (Appendix A-C). In the data and methods section, the exact requirements for the development of plain language material were discussed. These sheets were reviewed by the HOPE clinic CEO, medical directors, health care providers, and medical assistances. Translation was completed internally by several members of the staff then was back translated and reviewed by other members of the clinical staff. The translations were then formatted and combined with the English translations. When appropriate, visuals were included that were found to be culturally appropriate.

4.3 Pre-testing Feedback

Pre-testing feedback in this pilot study was important to assess readability, visuals, and translation. The goal was to obtain feedback from five to ten members of the target language groups that had a new or previous diagnosis of HTN. These individuals were chosen through convenience sampling from those that were seen in clinic April 23-27, 2012. The target of five

individuals was obtained for Chinese and Spanish, however only one was obtained for Vietnamese. The HTN material was provided to the patients to read prior to being seen by their health care provider. At the end of their encounter, they were asked for feedback about the material. The patients were asked a series of questions about readability and understanding, visual choice, what was new or useful, and what could be added or changed to improve the hand-out (Appendix D). The initial two respondents for Chinese reported difficulty understanding the text, particularly in relationship to how HTN affects the body. They each provided feedback with suggestions for character changes. These changes were discussed with the original translators and adjustments were made. Following the adjustments, the final three patients found the hand-outs easy to read and understand. The Spanish patients did not have any suggestions for improvement. The Vietnamese patient did not have any suggestions for improvement. In all groups the most helpful hand-out was that pertaining to changes in diet, followed by information about how to take a blood pressure, and how hypertension affects the body. The only changes that were made were those in the Chinese translations. These hand-outs were then added to the HOPE Clinic server to remain as a resource for the health care providers and patients.

4.4 Health Care Provider Educational Template

The implementation of the educational material would be of little value to the clinic if the health care providers did not also understand the purpose of the material and how to create additional low literacy information. A document was created for the health care providers and staff which provides a simple guideline of how to create low literacy material without the need for computer programs or specialized personnel^{3,8, 9,12}. This material was formally presented to the health care providers and staff through a brief presentation and discussion on April 27, 2012. Pamphlets were also provided containing the guidelines and an electronic version was created

that could be placed in the HOPE Clinic server. The discussion permitted all members of the staff to discuss current barriers and suggest changes that could be made to improve the clinic. Health literacy is a serious concern within the clinic, and many future efforts are needed to ensure that the health care providers and patients are able to form a mutually beneficial relationship.

Chapter 5: Discussion

5.1 Practical Application

Plain language is easy to conceptualize but difficult to implement, especially within a heterogeneous patient population. There are many options available to educate a patient, including written material, audiovisual media, and spoken interactions. Each of these individual teaching modalities provides only a small amount of information to the low literacy learner. However, together and with repetition the patient can become engaged in their own healthcare. This capstone project utilized available resources and guidelines to assist in the development and early implementation of a clinic wide health literacy program. The project was comprised of two major components: 1) the development of plain language material in multiple languages and 2) the development of an introductory plan to expand and improve health literacy efforts in the clinic. The written component is a foundation upon which to expand and engage the HOPE clinic population. Through the development of resources to assist with further development of low literacy material, the next step will be to expand the written material to an audiovisual format.

5.2 Limitations

This capstone project was based upon descriptive study information, thus there are inherently many limitations. The information about the target audience was gathered from registration material already collected by the clinic. The information provided on these forms was not verified to ascertain language(s) spoken or translation need. Furthermore, not all languages and cultural/racial groups are found on the current registration sheet, which led to many patients either selecting other or making no selection. Additionally, these forms are

collected at the initial registration and therefore may not reflect the current translation needs of the patients.

The project's educational materials were translated internally at the HOPE Clinic. Professional translation services are available for a multitude of languages, with many specializing in medical translations. However, limited financial resources prevented the clinic from supporting the costs for the translation of the educational material. Therefore, technical errors may have been introduced into the educational material. However, given that the material was reviewed by multiple staff members and patients, this is probably of minimal concern. The concern for cultural errors in translation is less of an issue, as the majority of the medical translators were members of the target ethnic/racial group and lived within the target communities.

This capstone was intended to be a pilot program to implement educational material that is both linguistically and culturally appropriate for the clinic. Due to financial and time constraints the educational material was presented to relatively small numbers of patients within the clinic. Therefore, while feedback was provided by these individuals, this may have been inadequate to truly reflect the values of the greater clinic population.

5.3 Future Research

There are many opportunities to continue expansion of this project for the benefit of the HOPE Clinic. This capstone project introduced a pilot series of information that illustrates that such information can be produced and may be of benefit to the patients. Additionally, information was provided to the health care providers to assist in facilitating the continued production of appropriate plain language health education material.

This project focused on HTN due to the high prevalence in the sample population. However, the educational material can and should be expanded to provide information about a wide range of educational topics that are important to the patients. Prior to the development of future material, surveys or focus groups should be developed to improve assessment of the needs and interests of the patients. This will allow the production of future material that will be of most use to the target population. Future material may include but is not limited to additional educational hand-outs or posters, group educational classes, the development of audiovisual material for the waiting room or clinic rooms, or continued improvements in website education.

Additionally, a larger project could collect objective markers (i.e. blood pressure, weight, waist-to-hip circumference) or subjective markers (i.e. surveys) to provide information to the clinic population before and at preselected intervals to determine if the educational interventions are benefiting the target population. Such an intervention would provide measurable parameters to indicate if the presented material is not only easy to understand, but is also being implemented successfully.

Appendix A: Spanish Translation

¿Que es la Hipertensión?

La hipertensión también se llama presión alta. Hay muchas causas para la presión alta.

- ¿Que significan los números?

La presión sanguínea tiene dos números. El número de arriba es el latido del corazón. El de abajo es cuando el corazón se relaja. Estos números indican si uno tiene hipertensión. Ambos números son importantes

Presión de la sangre =
$\frac{120 \text{ (el número de arriba)}}{80 \text{ (el número de abajo)}}$

- ¿Que es una presión de sangre normal?

Es cuando el número de arriba es menor a 120 y el número de abajo es menor a 80.

- ¿Que pasa si la presión de la sangre es “un poco alta”?

Esto ocurre cuando el número de arriba es entre 120 y 139. O el número de abajo es entre 80 y 89. Esto significa que usted algún día podría tener hipertensión. Comience a tener una vida más saludable hoy mismo.

- ¿Que números son demasiado altos?

El número de arriba es mayor a 140. O el número de abajo es mayor a 90. Cuando ocurre esto más de dos veces, quiere decir que tiene hipertensión.

No esta solo. Mucha gente tiene la presión alta. Con frecuencia uno no sabe que tiene la presión alta. Pregunte a su medico como prevenir y tratarla.

What is Hypertension?

Hypertension is also called high blood pressure. There are many causes of high blood pressure.

- What do the numbers mean?

Your blood pressure has two numbers. The top number is the heart beating. The bottom number is the heart relaxing. These numbers help decide if you have hypertension. Both numbers are important.

Blood Pressure =
$\frac{120 \text{ (top number)}}{80 \text{ (bottom number)}}$

- What is a normal blood pressure?

This is when the top number is smaller than 120. And the bottom number is smaller than 80.

- What if your blood pressure is a “little” high?

This is when the top number is between 120 and 139. Or the bottom number is between 80 and 89. This means you may someday have hypertension. Start making more healthy choices today.

- What numbers are too high?

The top number is larger than 140. Or the bottom number is larger than 90. When this happens at two different times, you have hypertension.

You are not alone. Many people have high blood pressure. Often you will not know that you have high blood pressure. Ask your health care provider about prevention and treatment.

¿Qué significan esos números de la presión sanguínea?

- Ambos números son importantes. Los dos juntos ayudan a saber como tratar la presión de la sangre.
 - El **número de arriba** es el latido del corazón. El número de arriba debe ser menor a 120.
 - El **número de abajo** es la relajación del corazón. El número de abajo debería ser menor a 80.

Recuerde que cada persona es diferente. Los números de su presión cambiarán. Pregunte a su médico cual debería ser su presión sanguínea.

- ¿Qué pasa si los números de su presión son demasiado altos, o bajos?

Hágase algunas preguntas importantes.

- ¿Siente dolor en el pecho?
- ¿Tiene problemas en respirar?
- ¿Tiene dolores de cabeza?
- ¿Tiene problemas para ver?
- ¿Se siente débil o le da mareos?

Si las respuestas son si, el problema puede ser serio. Llame a su médico, o al 911, ahora.



What do those blood pressure numbers mean?

- Both numbers are important. Together the numbers help figure out how to treat your blood pressure.
 - The **top number** is your heart beating. The top number should be smaller than 120.
 - The **bottom number** is your heart relaxing. The bottom number should be smaller than 80.

Remember every person is different. Your blood pressure numbers will change. Ask your health care provider what your blood pressure should be.

- What if your numbers too high, or too low?

Ask yourself a few important questions.

- Do you have chest pain?
- Are you having trouble breathing?
- Do you have a headache?
- Are you having trouble seeing?
- Do you feel weak or dizzy?

If you answered yes, this could be serious. Call your health care provider, or 911 now.

Presión Alta: Diagnostico y Tratamiento

La presión alta no le causara ninguna molestia. Debería hacerse tomar la presión por lo menos una vez cada 2 años. Debe hacerlo aunque haya tenido la presión normal antes.

Generalmente la presión alta ocurre de por vida. Pero esta se puede volver normal. Esto es posible mediante una vida sana y algunas veces con medicamentos.

El mantener la presión normal es importante. El cuerpo funciona mejor cuando la presión sanguínea esta bajo control.

¿Donde acudir para hacerse medir la presión de la sangre?

- Pregunte a su medico.
- Haga medirse la presión en cualquier almacén local.
- En las ferias de salud.

¿Que opciones de tratamiento tiene uno?

- Cambiar el estilo de vida para mejor.
 - Puede mejorar sus hábitos alimenticios.
 - Disminuir la sal.
 - Disminuir el consumo de alcohol.
 - Elegir alimentos saludables.
 - Mantenerse mas activo haciendo mas ejercicios.
 - Esforzarse por perder de 5 a 10% de su peso actual.
- A veces es necesario recurrir a las medicinas.
 - Hay muchas clases de medicinas para la presión alta. Todas ellas afectan en forma diferente a cada persona.
- Si tiene la presión alta, avísele a su familia. La presión alta generalmente también se desarrolla en los otros miembros de la familia.

High Blood Pressure: Diagnosis and Treatment

High blood pressure may not make you feel funny. You should check your blood pressure at least once every 2 years. You should check even if you have had normal blood pressures before.

For most, high blood pressure occurs for life. But your blood pressure can become normal. This is possible with healthy choices and sometimes medicine.

Keeping your blood pressure normal is important. Your body works best when your blood pressure is under control.

Where to go to check your blood pressure?

- Ask your health care provider.
- Check your blood pressure at your local store.
- Go to a health fair.

What treatment options are there?

- Changing your lifestyle for the better.
 - You can improve your eating habits.
 - Limit salt.
 - Limit alcohol
 - Make your eating choices healthy.
 - Increase activity, by getting more exercise.
 - Work toward losing 5-10% of your current weight.
- Medication is often necessary.
 - There are many types of blood pressure medicine. Different medications work differently for each person.
- If you have high blood pressure, tell your family. High blood pressure often develops in other family members.

¿Qué cambio hábitos de alimentación podrían ayudarle a bajar la presión?

Usted puede hacer cambios importantes. Aprenda a elegir su comida. Vea que alimentos tiene en su despensa y refrigerador, ¿con que frecuencia los consume?

- Pruebe la dieta D.A.S.H.
 - Aumente la fibra diaria.
 - Aumente la fruta y los vegetales. Debería consumir por lo menos de 4 a 6 porciones al día.
 - Escoja granos integrales.
 - Escoja productos lácteos con calorías bajas.
 - Escoja carne, pescado y pollo desgrasados.
 - Consulte dashdiet.org en el Internet.



- Disminuya el consumo de sal.
 - La meta sería no más de 1500 mg de sal por día. Los mg. figuran en las etiquetas.
 - Evite tener sal en la mesa o cocinar con ella.
- Si bebe alcohol, contrólese. Si no lo hace, no comience a beber.
 - Los hombres solo deben beber no más de 2 vasos al día.
 - Las mujeres no deben beber más de 1 vaso al día.

¿Que es 1 bebida?
 Un vaso de 4 onzas de vino.
 O una lata de 12 onzas de cerveza.
 O un trago de 1 onza de licor.

What eating habit changes will help your blood pressure?

You can make smart choices. Learn about the food that you eat. Take a look at your pantry and refrigerator, what foods do you have? How often do you eat out?

- Try the D.A.S.H. diet.
 - Increase daily fiber.
 - Increase fruit and vegetables. You should be getting at least 4 to 6 servings per day.
 - Choose whole grains.
 - Choose low fat dairy products.
 - Choose lean meat, fish, and poultry.
 - See the website dashdiet.org.

- Limit salt intake
 - The goal is no more than 1500 mg of salt per day. The mg is listed on the food labels
 - Avoid keeping salt at the table or cooking with salt.
- If you drink alcohol, limit yourself. If you don't drink, don't start.
 - If you are a man, have no more than 2 drinks per day.
 - If you are a woman, have no more than 1 drink per day.

What is 1 drink?
 One 4 oz glass of wine.
 Or one 12 oz can of beer.
 Or one 1 oz shot of liquor.

¿Como se mide la Presión Alta?

Verifique su presión sanguínea a la misma hora del día. La presión sanguínea cambia a lo largo del día.

- Encuentre un sitio cómodo donde sentarse.
- Descanse el brazo al mismo nivel que el corazón.
- Respire lentamente y trate de relajarse.
- Permanezca quieto cuando funciona la maquina.

- ¿Toma alguna medicina para la presión?
Tómese la presión a más o menos a la misma hora todos los días. Espere 1 a 2 horas antes de tomarse la presión.
- Mantenga un registro diario de su presión.
Esto le ayudara a recordar los números. Este registro le servirá también a su medico.
 - Registre la fecha y la hora.
 - Registre los números de arriba y los de abajo.

Encuentre un sitio cómodo donde sentarse.



Find a comfortable place to sit.

Descanse el brazo al mismo nivel que el corazón.



Rest your arm level with your heart.

Respire lentamente y trate de relajarse.



Breathe slowly and try to relax.

Permanezca quieto cuando funciona la maquina.



Remain quiet while the machine runs.

How do you measure your Blood Pressure?

Check your blood pressure at the same time of day. Your blood pressure changes throughout the day.

- Find a comfortable place to sit.
- Rest your arm level with your heart.
- Breathe slowly and try to relax.
- Remain quiet while the machine runs.

- Do you take blood pressure medicine?
Take your blood pressure at about the same time daily. Wait 1 to 2 hours before taking your blood pressure.
- Start a blood pressure journal.
This will help you remember your numbers. These numbers will help your health care provider too.
 - Write down the date and time.
 - Write down the top and bottom numbers.

¿Por qué debería tratarse la presión alta?

Generalmente uno se siente normal si se tiene presión alta. Sin embargo esto causa tensión en todo el cuerpo.

- **En el Corazón.**

El corazón es un músculo poderoso. Su función es bombear sangre a todas partes del cuerpo.

La presión alta hace que su corazón trabaje demasiado. Con el tiempo el músculo del corazón se vuelve delgado y lento. El corazón ya no puede tener la fuerza necesaria. Esto hace que se produzca una falla congestiva del corazón, o CHF.

- **En los Vasos Sanguíneos.**

Los vasos sanguíneos llevan tanto alimento como oxígeno al cuerpo y lo limpian de desperdicios. La presión alta hace que los vasos sanguíneos se vuelvan gruesos y angostos. Esto priva de alimento y oxígeno al cuerpo. Con el tiempo esto hace que el cuerpo colapse. Lo que puede dar lugar a un ataque de corazón e infartos prematuros.

- **El cerebro.**

El cerebro es muy delicado. Necesita un constante suministro de alimento y oxígeno. La presión alta priva al cerebro de alimento y oxígeno. La presión sube también en los vasos sanguíneos del cerebro. Cuando esto ocurre puede dar lugar a una embolia.

- **Los riñones.**

Los riñones limpian los desperdicios que el cuerpo produce y los libera en la orina. Los riñones tienen muchos vasos sanguíneos que permiten que funcionen.

La presión alta limita el flujo de sangre a los riñones. Esto hace que disminuyan su capacidad de limpiar y eliminar el desperdicio. Con el tiempo los riñones dejan de funcionar, esto se conoce como falla renal o ESRD (Enfermedad Terminal de los Riñones). Esto puede significar que tenga que someterse a diálisis por el resto de la vida.

Why should you treat your high blood pressure?

Often you will feel okay if you have high blood pressure. However, high blood pressure causes stress on your entire body.

- **Your Heart.**

Your heart is a powerful muscle. Its job is to pump blood to all parts of your body.

High blood pressure makes your heart work too hard. Over time the heart muscle becomes thick and slow. The heart is unable to be as powerful. This leads to congestive heart failure, or CHF.

- **Your Blood Vessels.**

Blood vessels take food and oxygen to your body and remove waste. High blood pressure makes the vessels thick and narrow. This starves your body of food and oxygen. Over time this causes the body to shut down. This can cause early heart attacks and strokes.

- **Your Brain.**

The brain is very delicate. It needs a constant supply of food and oxygen. The high blood pressure keeps food and oxygen from the brain. Also, the pressure in the blood vessels in the brain becomes too high. When this happens a stroke or "brain attack" may occur.

- **Your Kidney.**

The kidney cleans wastes that your body makes and releases them into urine. There are many blood vessels that allow the kidney to work.

High blood pressure limits blood flow to the kidneys. This leads to decreased ability to clean out waste. Over time the kidneys could stop working this is known as renal failure or ESRD (end-stage renal disease). This could mean needing dialysis for life. Dialysis is through a machine that cleans the blood like the kidney. This occurs three or more times per week.

Appendix B: Vietnamese Translation

Cao huyết áp là gì?

Cao huyết áp còn gọi là cao máu. Có rất nhiều nguyên nhân gây ra cao huyết áp.

○ Ý nghĩa của hai chỉ số là gì?

Huyết áp của quý vị gồm hai số. Số nằm trên là nhịp tim.
Số nằm dưới là tim thư giãn.
Những số này quyết định xem quý vị có bệnh cao huyết áp hay không. Cả hai chỉ số đều rất quan trọng.

$$\left[\begin{array}{l} \text{Huyết áp} = \\ \underline{120 \text{ (số trên)}} \\ 80 \text{ (số dưới)} \end{array} \right]$$

○ Chỉ số bình thường là gì?

Là khi chỉ số nằm trên nhỏ hơn 120. Và chỉ số nằm dưới nhỏ hơn 80

○ Chỉ số “hơi cao” là gì?

Là khi chỉ số nằm trên từ 120 đến 139. Hoặc khi chỉ số nằm dưới từ 80 đến 89. Có nghĩa là một ngày nào đó, quý vị sẽ bị cao huyết áp. Bắt đầu những lựa chọn tốt cho sức khỏe ngay hôm nay.

○ Chỉ số cao là gì?

Chỉ số nằm trên cao hơn 140. Hoặc chỉ số nằm dưới cao hơn 90. Nếu trường hợp này xảy ra trên 2 lần, quý vị bị cao huyết áp

Quý vị không đơn độc. Có rất nhiều người bị cao huyết áp. Thường thì quý vị sẽ không biết mình bị cao huyết áp. Hỏi bác sĩ của quý vị về cách phòng ngừa và điều trị



What is Hypertension?

Hypertension is also called high blood pressure. There are many causes of high blood pressure.

○ What do the numbers mean?

Your blood pressure has two numbers. The top number is the heart beating.
The bottom number is the heart relaxing.
These numbers help decide if you have hypertension. Both numbers are important.

$$\left[\begin{array}{l} \text{Blood Pressure} = \\ \underline{120 \text{ (top number)}} \\ 80 \text{ (bottom number)} \end{array} \right]$$

○ What is a normal blood pressure?

This is when the top number is smaller than 120. And the bottom number is smaller than 80.

○ What if your blood pressure is a “little” high?

This is when the top number is between 120 and 139. Or the bottom number is between 80 and 89. This means you may someday have hypertension. Start making more healthy choices today.

○ What numbers are too high?

The top number is larger than 140. Or the bottom number is larger than 90. When this happens at two different times, you have hypertension.

You are not alone. Many people have high blood pressure. Often you will not know that you have high blood pressure. Ask your health care provider about prevention and treatment.

Hai chỉ số của huyết áp có nghĩa gì?

- Cả hai số đều rất quan trọng. Chúng giúp cho cách chữa trị bệnh cao huyết áp của quý vị
 - Chỉ số nằm trên là nhịp tim. Chỉ số này nên nhỏ hơn 120
 - Chỉ số nằm dưới là tim thư giãn. Chỉ số này nên nhỏ hơn 80

Luôn nhớ rằng mỗi người khác nhau. Chỉ số của quý vị sẽ thay đổi. Hỏi bác sĩ của quý vị về chỉ số nên có của mình



- Chỉ số quá cao hoặc quá thấp?

Tự hỏi bản thân một vài câu hỏi sau.

- Mình có bị đau ngực không?
- Mình có vấn đề hít thở không?
- Mình có bị nhức đầu không?
- Mình có bị vấn đề với thị lực không?
- Mình có cảm thấy yếu và chóng mặt không?

Nếu quý vị trả lời có, điều này rất nghiêm trọng. Gọi cho bác sĩ của quý vị, HOẶC 911 ngay lập tức

What do those blood pressure numbers mean?

- Both numbers are important. Together the numbers help figure out how to treat your blood pressure.
 - The **top number** is your heart beating. The top number should be smaller than 120.
 - The **bottom number** is your heart relaxing. The bottom number should be smaller than 80.

Remember every person is different. Your blood pressure numbers will change. Ask your health care provider what your blood pressure should be.

- What if your numbers too high, or too low?

Ask yourself a few important questions.

- Do you have chest pain?
- Are you having trouble breathing?
- Do you have a headache?
- Are you having trouble seeing?
- Do you feel weak or dizzy?

If you answered yes, this could be serious. Call your health care provider, or 911 now.

Cao huyết áp: chẩn bệnh và điều trị

Cao huyết áp sẽ không làm quý vị cảm thấy vui. Quý vị nên kiểm tra huyết áp ít nhất một lần mỗi hai năm. Quý vị nên kiểm tra cho dù quý vị có chỉ số huyết áp bình thường trước đây.

Hầu hết, cao huyết áp kéo dài cả đời. Nhưng chỉ số huyết áp có thể trở nên bình thường. Điều này có thể xảy ra khi quý vị có lựa chọn tốt cho sức khỏe và dùng thuốc.

Giữ huyết áp bình thường rất quan trọng. Cơ thể của quý vị làm việc tốt nhất khi huyết áp ở mức bình thường.

Kiểm tra huyết áp ở đâu?

- Hỏi bác sĩ của quý vị.
- Tại các tiệm gần nhà.
- Đến hội chợ y tế.



Cách chữa trị?

- Thay đổi lối sống tốt hơn.
 - Quý vị có thể cải thiện thói quen ăn uống.
 - Giảm muối.
 - Giảm mỡ
 - Lựa chọn cách ăn uống khỏe mạnh .
 - Tăng hoạt động, bằng cách tập thể dục nhiều hơn.
 - Cố gắng giảm 5% đến 10% trọng lượng của mình.
- Thuốc luôn cần thiết.
 - Có rất nhiều thuốc cho bệnh cao huyết áp. Mỗi thuốc khác nhau có tác dụng khác nhau đối với từng người.
- Nếu quý vị bị cao huyết áp, nên nói với gia đình. Cao huyết áp có thể phát triển trong những thành viên khác trong gia đình.

High Blood Pressure: Diagnosis and Treatment

High blood pressure may not make you feel funny. You should check your blood pressure at least once every 2 years. You should check even if you have had normal blood pressures before.

For most, high blood pressure occurs for life. But your blood pressure can become normal. This is possible with healthy choices and sometimes medicine.

Keeping your blood pressure normal is important. Your body works best when your blood pressure is under control.

Where to go to check your blood pressure?

- Ask your health care provider.
- Check your blood pressure at your local store.
- Go to a health fair.

What treatment options are there?

- Changing your lifestyle for the better.
 - You can improve your eating habits.
 - Limit salt.
 - Limit alcohol
 - Make your eating choices healthy.
 - Increase activity, by getting more exercise.
 - Work toward losing 5-10% of your current weight.
- Medication is often necessary.
 - There are many types of blood pressure medicine. Different medications work differently for each person.
- If you have high blood pressure, tell your family. High blood pressure often develops in other family members.

Thay đổi cách ăn uống sẽ giúp cho bệnh cao huyết áp?

Quý vị có thể làm một lựa chọn sáng suốt. Tìm hiểu về thực phẩm quý vị ăn. Nhìn vào tủ lạnh của mình, thức ăn nào quý vị có? Bao lâu quý vị ăn bên ngoài một lần?

- Thử cách ăn D.A.S.H.
 - Tăng chất xơ.
 - Tăng trái cây và rau quả. Quý vị nên ăn 4 đến 6 phần một ngày.
 - Chọn gạo lức.
 - Chọn bơ sữa ít chất béo.
 - Chọn thịt nạc, cá.
 - Xem trang mạng dashdiet.org.



- Giảm muối
 - Mục tiêu là không quá 1500mg muối một ngày. Số mg có ghi trong thành phần bao bì
 - Tránh để muối trên bàn hoặc nấu ăn với muối.
- Nếu quý vị uống rượu bia, nên giảm. Nếu quý vị không uống rượu bia, không nên uống
 - Nếu quý vị là đàn ông, không nên uống quá 2 li một ngày
 - Nếu quý vị là phụ nữ, không nên uống quá 1 li một ngày.

1 li có nghĩa là gì?
Một li với 4 oz rượu.
Hoặc một lon với 12 oz bia.
Hoặc một li với 1 oz rượu mạnh.

What eating habit changes will help your blood pressure?

You can make smart choices. Learn about the food that you eat. Take a look at your pantry and refrigerator, what foods do you have? How often do you eat out?

- Try the D.A.S.H. diet.
 - Increase daily fiber.
 - Increase fruit and vegetables. You should be getting at least 4 to 6 servings per day.
 - Choose whole grains.
 - Choose low fat dairy products.
 - Choose lean meat, fish, and poultry.
 - See the website dashdiet.org.

- Limit salt intake
 - The goal is no more than 1500 mg of salt per day. The mg is listed on the food labels
 - Avoid keeping salt at the table or cooking with salt.

- If you drink alcohol, limit yourself. If you don't drink, don't start.

- If you are a man, have no more than 2 drinks per day.
- If you are a woman, have no more than 1 drink per day.

What is 1 drink?
One 4 oz glass of wine.
Or one 12 oz can of beer.
Or one 1 oz shot of liquor.

Đo huyết áp như thế nào?

Đo huyết áp cùng thời gian cho mỗi ngày. Huyết áp của quý vị thay đổi trong ngày.

- Tìm một nơi thoải mái để ngồi.
- Thả lỏng cánh tay với tim.
- Thở chậm rãi, thoải mái.
- Im lặng khi máy đo hoạt động.

○ Quý vị có dùng thuốc cao huyết áp không?

Đo huyết áp cùng thời gian mỗi ngày. Đo huyết áp sau khi uống thuốc 1 đến 2 tiếng.

- Ghi chép số đo huyết áp.
Điều này giúp quý vị nhớ số đo của mình. Những chỉ số này cũng sẽ giúp bác sĩ của quý vị.
 - Ghi rõ ngày và thời gian.
 - Ghi cả chỉ số nằm trên và nằm dưới.

Tìm một nơi thoải mái để ngồi.



Find a comfortable place to sit.

Thả lỏng cánh tay với tim.



Rest your arm level with your heart.

Thở chậm rãi, thoải mái.



Breathe slowly and try to relax.

Im lặng khi máy đo hoạt động.



Remain quiet while the machine runs.

How do you measure your Blood Pressure?

Check your blood pressure at the same time of day. Your blood pressure changes throughout the day.

- Find a comfortable place to sit.
- Rest your arm level with your heart.
- Breathe slowly and try to relax.
- Remain quiet while the machine runs.

○ Do you take blood pressure medicine?

Take your blood pressure at about the same time daily. Wait 1 to 2 hours before taking your blood pressure.

• Start a blood pressure journal.

This will help you remember your numbers. These numbers will help your health care provider too.

- Write down the date and time.
- Write down the top and bottom numbers.

Tại sao nên điều trị bệnh cao huyết áp?

Thường thì quý vị sẽ thấy bình thường dù bị cao huyết áp. Tuy nhiên, cao huyết áp gây ra sự căng thẳng trên toàn bộ cơ thể quý vị

- **Tim.**

Tim của quý vị là một bắp thịt đầy năng lượng. Nhiệm vụ là đẩy máu đến các phần trong cơ thể. Cao huyết áp làm tim hoạt động nhiều hơn. Nhiều lần như vậy khiến bắp thịt dày và yếu hơn. Tim sẽ không hoạt động tốt nữa. Dẫn đến suy tim, hoặc CHF.

- **Mạch máu.**

Mạch máu dẫn thức ăn và khí oxy đến cơ thể và loại bỏ chất thừa. Cao huyết áp khiến mạch máu dày và hẹp. Nó khiến cơ thể thiếu thức ăn và khí oxy. Nhiều lần như vậy khiến cơ thể bị suy sụp. Có thể dẫn đến đau tim và tai biến mạch máu não.

- **Não.**

Não rất nhạy cảm và mỏng manh. Nó cần một lượng cung cấp nhất định thức ăn và khí oxy. Huyết áp cao giữ thức ăn và khí oxy từ não. Áp lực trong mạch máu não tăng cao, dẫn đến bị tai biến mạch máu não

- **Thận.**

Thận làm sạch và rửa bỏ chất cặn bã trong cơ thể qua đường nước tiểu. Có rất nhiều mạch máu cho phép thận làm việc. Cao huyết áp giới hạn máu lưu thông đến thận. Nó làm giảm khả năng làm sạch của thận. Nhiều lần như vậy khiến thận ngưng hoạt động như suy thận hoặc ESRD (giai đoạn cuối của bệnh thận). Bệnh nhân phải lọc máu suốt đời.

Why should you treat your high blood pressure?

Often you will feel okay if you have high blood pressure. However, high blood pressure causes stress on your entire body.

- **Your Heart.**

Your heart is a powerful muscle. Its job is to pump blood to all parts of your body.

High blood pressure makes your heart work too hard. Over time the heart muscle becomes thick and slow. The heart is unable to be as powerful. This leads to congestive heart failure, or CHF.

- **Your Blood Vessels.**

Blood vessels take food and oxygen to your body and remove waste. High blood pressure makes the vessels thick and narrow. This starves your body of food and oxygen. Over time this causes the body to shut down. This can cause early heart attacks and strokes.

- **Your Brain.**

The brain is very delicate. It needs a constant supply of food and oxygen. The high blood pressure keeps food and oxygen from the brain. Also, the pressure in the blood vessels in the brain becomes too high. When this happens a stroke or "brain attack" may occur.

- **Your Kidney.**

The kidney cleans wastes that your body makes and releases them into urine. There are many blood vessels that allow the kidney to work.

High blood pressure limits blood flow to the kidneys. This leads to decreased ability to clean out waste. Over time the kidneys could stop working this is known as renal failure or ESRD (end-stage renal disease). This could mean needing dialysis for life. Dialysis is through a machine that cleans the blood like the kidney. This occurs three or more times per week.

Appendix C: Chinese Translation

什麼是高血壓?

高血壓也被稱為“Hypertension”。
血壓高的原因很多。

- 數目是什麼意思?

你的血壓是兩個高低讀數。
高讀數稱為心臟收縮壓。
低讀數稱為心臟舒張壓。這些數目
肯定你否有高血壓。這高低數目都是重要的

- 什麼是正常血壓?

上面的數目應該比120更低。
下面的數目應該比80更低。

$$\left(\begin{array}{l} \text{血壓} = \\ \underline{120} \text{ (高讀)} \\ 80 \text{ (低讀)} \end{array} \right)$$

- 假如你的血壓有“一點”高?

如果你的高讀(上面)的數目在120和139之間
或低讀(下面)的數目在80和89之間,
表示你可能有一天會有高血壓。
今天開始作更收健康的生活選擇

- 什麼血壓數目算太高?

高讀(上面)數目在超過
140或低讀(下面)數目超過 90。
當這種情況超過兩次, 你有高血壓的症狀。

但你並不是唯一一個。
很多人有高血壓但不知道自己的病情。
請詢問您的醫生關於:



What is Hypertension?

Hypertension is also called high blood pressure.
There are many causes of high blood pressure.

- What do the numbers mean?

Your blood pressure has two numbers. The
top number is the
heart beating.
The bottom
number is the
heart relaxing.
These numbers
help decide if you have hypertension. Both
numbers are important.

$$\left(\begin{array}{l} \text{Blood Pressure} = \\ \underline{120} \text{ (top number)} \\ 80 \text{ (bottom number)} \end{array} \right)$$

- What is a normal blood pressure?

This is when the top number is smaller than
120. And the bottom number is smaller than
80.

- What if your blood pressure is a “little” high?

This is when the top number is between 120
and 139. Or the bottom number is between
80 and 89. This means you may someday
have hypertension. Start making more
healthy choices today.

- What numbers are too high?

The top number is larger than 140. Or the
bottom number is larger than 90. When this
happens at two different times, you have
hypertension.

You are not alone. Many people have high blood
pressure. Often you will not know that you have
high blood pressure. Ask your health care
provider about prevention and treatment.

這些血壓的數字代表什麼？

- 這兩方面的數字都非常重要。聯合這兩個數字有助於治療你的血壓。
 - 高讀(上面)的數目是你的心跳。上面的數目應該比120更低。
 - 低讀(下面)是你的心臟放輕鬆。下面的數目應該比80更低。

記住，每個人都是不同。你的血壓可以改變的。請和你的醫生討論屬於你的健康血壓數目。



- 如果你的血壓太高或太低？

請自問這幾個重要的問題：

- 您的胸口會痛嗎？
- 你有呼吸困難嗎？
- 你有頭痛嗎？
- 你有看不清楚的情況？
- 你會覺得虛弱或暈眩？

如果你有這些症狀，有可能是嚴重的情況。請和您的醫生聯繫，或撥911。

What do those blood pressure numbers mean?

- Both numbers are important. Together the numbers help figure out how to treat your blood pressure.
 - The top number is your heart beating. The top number should be smaller than 120.
 - The bottom number is your heart relaxing. The bottom number should be smaller than 80.

Remember every person is different. Your blood pressure numbers will change. Ask your health care provider what your blood pressure should be.

- What if your numbers too high, or too low?

Ask yourself a few important questions.

- Do you have chest pain?
- Are you having trouble breathing?
- Do you have a headache?
- Are you having trouble seeing?
- Do you feel weak or dizzy?

If you answered yes, this could be serious. Call your health care provider, or 911 now.

高血壓：診斷和治療

高血壓，有時不會讓你覺感覺得到。你應該檢查你的血壓每年至少兩次。雖然去年的血壓是正常的，為了您的健康，今年請再次檢查。

對於許多，高血壓是終身。

但您可以保持正常的血壓。健康的選擇，也許藥品可以讓您保持控制高血壓。

保持正常血壓是很重要。

當血壓是正常的，你的身體機能是最好。

哪裡可以去檢查你的血壓？

- 問您的的家庭醫生
- 超市的藥房也許有血壓測量機
- 社區健康日



有什麼治療方法？

- 改善生活方式
 - 更改你的飲食習慣
 - 限制鹽
 - 限制酒精
 - 選擇健康的食物
 - 多做運動
 - 減掉目前5%-10%的體重
- 藥物治療往往是必要的
 - 高血壓藥有許多種。每種藥對每個人有不同的效。
 - 如果你有血壓高請告訴您的家人。血壓高是遺傳的。

High Blood Pressure: Diagnosis and Treatment

High blood pressure may not make you feel funny. You should check your blood pressure at least once every 2 years. You should check even if you have had normal blood pressures before.

For most, high blood pressure occurs for life. But your blood pressure can become normal. This is possible with healthy choices and sometimes medicine.

Keeping your blood pressure normal is important. Your body works best when your blood pressure is under control.

Where to go to check your blood pressure?

- Ask your health care provider.
- Check your blood pressure at your local store.
- Go to a health fair.

What treatment options are there?

- Changing your lifestyle for the better.
 - You can improve your eating habits.
 - Limit salt.
 - Limit alcohol
 - Make your eating choices healthy.
 - Increase activity, by getting more exercise.
 - Work toward losing 5-10% of your current weight.
- Medication is often necessary.
 - There are many types of blood pressure medicine. Different medications work differently for each person.
- If you have high blood pressure, tell your family. High blood pressure often develops in other family members.

什麼飲食習慣的變化會幫助你的血壓？

您可以做出明智的飲食選擇。首先了解你吃的食物。翻您的廚房冰箱，你看到什麼食物？你經常在外面吃飯嗎？

- 請嘗試 D.A.S.H. 飲食
 - 多吃有纖維的食物。
 - 多吃蔬菜和水果。應該每天吃 4 到 6 份。
 - 選擇全穀類的食物
 - 選擇低脂肪的乳類食品
 - 選擇低脂肪的肉類
 - 請參閱網站 D. A. S. H. 飲食dashdiet.org.



- 限制食用鹽
 - 目標是每日食鹽不超過1500毫克。
 - 食品標籤將貼上鹽的分量
 - 為了避免添加鹽分不要在餐桌上放著鹽瓶
 - 為了避免添加鹽分不要在餐桌上放著鹽瓶。做飯時少用鹽。

什麼是一分酒？

- ✓ 一杯4 oz 葡萄酒。
- ✓ 一罐12 oz 啤酒
- ✓ 1 oz烈酒

- 如果你喝酒，限制你的酒量。如果你不喝酒，請不要開始飲用
 - 如果你是男性，請在一天之內不要超過兩分酒
 - 如果你是女性，請在一天之內不要超過一分酒

What eating habit changes will help your blood pressure?

You can make smart choices. Learn about the food that you eat. Take a look at your pantry and refrigerator, what foods do you have? How often do you eat out?

- Try the D.A.S.H. diet.
 - Increase daily fiber.
 - Increase fruit and vegetables. You should be getting at least 4 to 6 servings per day.
 - Choose whole grains.
 - Choose low fat dairy products.
 - Choose lean meat, fish, and poultry.
 - See the website dashdiet.org.

- Limit salt intake
 - The goal is no more than 1500 mg of salt per day. The mg is listed on the food labels
 - Avoid keeping salt at the table or cooking with salt.
- If you drink alcohol, limit yourself. If you don't drink, don't start.
 - If you are a man, have no more than 2 drinks per day.
 - If you are a woman, have no more than 1 drink per day.

What is 1 drink?

- One 4 oz glass of wine.
- Or one 12 oz can of beer.
- Or one 1 oz shot of liquor.

如何測量您的血壓?

每天在同一時間檢查你的血壓。在一天之內，您的血壓會將改變。

- 找一個舒適的地方坐下來。
- 將你的手臂放在和你的心臟平高。
- 慢慢地呼吸，盡量放鬆。
- 當機器在測量你的血壓，請保持安靜

- 你有服血壓藥嗎?

請每天大約在同一時間測量你的血壓。
服藥後，請等待1到2小時再測量您的血壓

- 保持一個血壓日記
這日記將會幫你記錄你的血壓也會幫醫生了解您的情況。
- 記得。寫下日期和量血壓時間
- 寫下高讀(上面)血壓和低讀(下面)血壓

找一個舒適的地方坐下來。

將你的手臂放和你的心臟平高。

慢慢地呼吸，盡量放鬆。

當機器在測量你的血壓，請保持安靜



Find a comfortable place to sit.



Rest your arm level with your heart.



Breathe slowly and try to relax.



Remain quiet while the machine runs.

How do you measure your Blood Pressure?

Check your blood pressure at the same time of day. Your blood pressure changes throughout the day.

- Find a comfortable place to sit.
- Rest your arm level with your heart.
- Breathe slowly and try to relax.
- Remain quiet while the machine runs.

- Do you take blood pressure medicine?
Take your blood pressure at about the same time daily. Wait 1 to 2 hours before taking your blood pressure.
- Start a blood pressure journal.
This will help you remember your numbers. These numbers will help your health care provider too.
 - Write down the date and time.
 - Write down the top and bottom numbers.

為何治療高血壓？

通常，有高血壓也不會感覺到。

不過，高血壓會帶給你的身體的很大的壓力。

- 您的心臟

心臟是一個肌肉的結構。

心臟的工作是幫助身體血液循環。

高血壓會使您的心臟過度勞動。過久，心臟肌肉變得厚又慢，沒有以前強壯。也可能心臟衰竭 (Congestive Heart Failure) 會發生。

- 您的血管

血管幫助身體轉營養和氧氣也清除體內廢物。高血壓會把血管變成厚和窄。這減少身體需要的營養和氧氣。長時，身體的功能會開始停止。這會引起早期心臟病發作和中風。

- 你的頭腦

頭腦是非常精緻。

頭腦是非常精緻時刻需要營養和氧氣。

血壓高會減少身體需要的營養和氧氣。

當頭腦血管的壓力過高，有可能會中風。

- 你的腎

你的腎功能是清除體內的廢物，並從尿液把廢物排出體外。身體裡有許多血管支持腎功能。

高血壓抑制對腎臟的血流量。

長期高血壓會減少腎清理廢物的能力。

長期腎臟可能會停止功能。這被稱為腎功能衰竭 或 "End-Stage Renal Disease (ESRD)"。

如果腎功能衰竭，你需要依靠長期洗腎過活。

Why should you treat your high blood pressure?

Often you will feel okay if you have high blood pressure. However, high blood pressure causes stress on your entire body.

- Your Heart.

Your heart is a powerful muscle. Its job is to pump blood to all parts of your body.

High blood pressure makes your heart work too hard. Over time the heart muscle becomes thick and slow. The heart is unable to be as powerful. This leads to congestive heart failure, or CHF.

- Your Blood Vessels.

Blood vessels take food and oxygen to your body and remove waste. High blood pressure makes the vessels thick and narrow. This starves your body of food and oxygen. Over time this causes the body to shut down. This can cause early heart attacks and strokes.

- Your Brain.

The brain is very delicate. It needs a constant supply of food and oxygen. The high blood pressure keeps food and oxygen from the brain. Also, the pressure in the blood vessels in the brain becomes too high. When this happens a stroke or "brain attack" may occur.

- Your Kidney.

The kidney cleans wastes that your body makes and releases them into urine. There are many blood vessels that allow the kidney to work.

High blood pressure limits blood flow to the kidneys. This leads to decreased ability to clean out waste. Over time the kidneys could stop working this is known as renal failure or ESRD (end-stage renal disease). This could mean needing dialysis for life. Dialysis is through a machine that cleans the blood like the kidney. This occurs three or more times per week.

Appendix D: High Blood Pressure Hand-out Survey

Date: _____ Time: _____

Language: Vietnamese, Chinese (Mandarin or Cantonese), Spanish, English

PCP: Sawhney, Andrews, Bombach

High Blood Pressure Hand-out Survey

Are you able to read? Y or N

If yes, do you read...

- English
- Spanish
- Chinese
- Vietnamese

Do you have family that reads English? Y or N

Is the hand-out easy to read? Y or N

If no, please explain why?

Is the hand-out easy to understand? Y or N

If no, please explain why?

Are the visuals helpful? Y or N

If no, please explain why?

Did the hand-out help you understand high blood pressure? Y or N

If no, please explain what might help?

Which hand-out was the most helpful?

- What is hypertension?
- What do those blood pressure numbers mean?
- High blood pressure: Diagnosis and Treatment
- What eating habits will help your blood pressure?
- How do you measure your blood pressure?
- Why should you treat your high blood pressure?

Are there other high blood pressure topics you would like included? Y or N

If yes, which topics?

Do you have any additional suggestions or comments for the hand-out?

Appendix E: Primary Care Clinician Guide

<div data-bbox="250 317 342 369" data-label="Image"> </div> <div data-bbox="367 312 660 436" data-label="Section-Header"> <h2>Creating a Reader Friendly Health Message:</h2> </div> <div data-bbox="360 501 699 531" data-label="Text"> <p>A Guide for Primary Care Clinicians</p> </div> <div data-bbox="505 835 683 987" data-label="Image"> </div>	<ul style="list-style-type: none"> • Define who you would like your message to impact. • Determine information about the populations characteristics. <ul style="list-style-type: none"> - Examples: Age, Sex, Race/Ethnicity, SES - Recognize underlying beliefs, values and traditions. - Remain culturally sensitive. - Provide examples, visuals and information that are population specific. • Avoid over simplification, you do not want to patronize your target population. <div data-bbox="1136 590 1357 819" data-label="Image"> </div> <div data-bbox="1008 980 1062 1001" data-label="Text"> <p>Page 2</p> </div>
<div data-bbox="298 1115 391 1150" data-label="Image"> </div> <div data-bbox="402 1100 672 1161" data-label="Section-Header"> <h2>Determine your message and stay focused.</h2> </div> <ul style="list-style-type: none"> • The main point of your message should be stated at the beginning. <ul style="list-style-type: none"> - Then reinforce by restating at the end. • Concisely inform the patient why your message is important. <ul style="list-style-type: none"> - What will be the direct impact on the patient, or their family? - What are the benefits and harms? • Limit to scope of your message. <ul style="list-style-type: none"> - Medical messages are complex; break them down into manageable parts. - Limit yourself to 3 messages. - If the pamphlet is multiple pages, limit 1 message per page. - With each message, ask is the information nice to know, or necessary to know? If the information is nice to know, leave it out. - Abstract messages should be avoided, as these lead to in correct interpretation. - Provide concrete, specific messages only. • Be sure to complete 1 message before moving to the next message. 	<div data-bbox="911 1115 1003 1150" data-label="Image"> </div> <div data-bbox="1019 1104 1294 1161" data-label="Section-Header"> <h2>Create a plan of action that incorporates your message.</h2> </div> <ul style="list-style-type: none"> • A message must have a plan of action to give direction and motivation to the patient. • Create a concrete, goal oriented action plan. <ul style="list-style-type: none"> - Create small, manageable steps to the goal. - Avoid listing what should not be done, or behaviors to stop. - Rather focus on positive, active changes that can be made. • Provide resources that the patient can use. <ul style="list-style-type: none"> - Phone numbers, email addresses, websites or physical addresses. <div data-bbox="925 1606 1101 1797" data-label="Image"> </div> <div data-bbox="1019 1822 1066 1841" data-label="Text"> <p>Page 4</p> </div>



Take care with your word choice.

- Plain language is not about “dumbing down”, or decreasing the reading level of material. You still want to convey an evidence based message, just in a more understandable way.
- Use an active, conversational voice.
- Questions can be used as subheadings, or to help draw the patient into the message.
- Ensure that spelling and grammar are correct.
- Avoid abstract messages and information.
 - Avoid words with multiple meanings.
 - Limit medical and scientific jargon. When used be sure to clearly explain the meaning.
 - Avoid use of complicated statistics. Rather than discussing percentages and risk, use words such as few, many, etc.
 - Avoid acronyms or abbreviations. When used provide the colloquial form first, with the alternative in parenthesis. Example: STD (Sexually Transmitted Disease)
 - Avoid symbols, unless carefully pre-tested. Frequently symbols are not universal, and may not have the same meaning for everyone.
- Avoid quotations.
 - When used, define the speaker and context.
 - Make the quote appear to be part of an active conversation.

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Syntax is important to keeping the message readable.

- Break up complex messages into smaller reader friendly segments.
- Avoid long lists.
 - Lists are distracting, and the main message gets lost.
 - Break up the message using headings and subheadings.
 - Use bullets before each piece of information.
 - Limit yourself to 3-7 bullets. If you feel that more than 7 are needed, divide into subheadings.
 - Do not use commas.
- Use 1-2 syllable words when possible.
 - When more complex vocabulary is needed, be sure to explain definitions fully.
- Limit sentences to 8-10 words in length.
- Limit paragraphs to 3-5 sentences.
- Keep line lengths to 40-50 characters.
 - When longer break up the page into columns.

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Appearance is important.

- Plan to leave plenty of white space on the page.
 - Minimum ½ to 1 inch margins on all sides.
 - Keep a minimum of ½ to 1 inch between columns.
- Keep the text to the left, and unjustified.
 - The uneven spacing of justified is difficult to read.
- Font size matters.
 - Font size of the general text should be 12 or 14.
 - Heading font size should be 2 sizes larger.
- Certain font styles are easier to read.
 - Use fonts that have serifs, “little feet”.
 - Examples: Times New Roman, Century
 - Avoid fancy or frilly fonts.
- Font formatting can be selectively used for emphasis.
 - Bold type can be used.
 - Avoid italics, underlying, and all capitalization.
- Colors draw attention to key messages and information.
 - Use dark letters on light background.
 - Avoid light letters on dark background.
 - Avoid the color yellow.

Light letters on a dark background are hard to read!

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Well selected visuals can enhance your message.

- Key messages and information may be placed in boxes for emphasis.
- Just like the written message, keep visuals concrete and simple.
 - One visual shows one message.
 - Avoid confusing/abstract images or symbols.
 - Pretest visuals to ensure understandability.
- Do not include visuals that do not emphasize your message.
- Choose the type of image carefully.
 - When internal organs are used, place in context of the body.
 - For minute processes, show an enlarged version to give idea of size.
 - Real photographs provide realistic images with an emotional impact.
 - Simple illustrations are helpful for more complex messages.
 - Avoid cartoons, or childish material.



The illustration to the left is preferred because it gives context. While the other does not.



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Now that your message is complete, consider if translation is needed.

- Choose translators carefully.
 - Avoid literal translation from English, as this may have inappropriate meaning and context.
 - Give the translator flexibility.
 - Once your material is translated, translate back to English by a different translator. This reverse translation ensures that your message is actually being conveyed as you desire.
 - Certified translators are an option.
- Pre-test translations before introducing to the general population

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Resources

"Clear & Simple - Effective Print Materials for Low-Literate Readers." *Comprehensive Cancer Information - National Cancer Institute*. National Cancer Institute. Web. Nov. 2011. <<http://www.cancer.gov/cancertopics/cancerlibrary/clear-and-simple>>.

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"Quick Guide to Health Literacy." Office of Disease Prevention and Health Promotion. Web. Winter 2011. <<http://www.health.gov/communication/literacy/quickguide/Quickguide.pdf>>.

"Simply Put: A Guide to Creating Easy-to-understand Material." Centers for Disease Control (CDC), Apr. 2009. Web. Winter 2011. <http://www.cdc.gov/healthcommunication/ToolsTemplates/Simply_Put_082010.pdf>.

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Created by Rachel E. Mathers, MD
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Vita

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