2018

# Increasing Medication Adherence in Hypertensive Patients With Million Hearts® Health Literacy Program

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

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Walden University
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Abstract

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MSN, Walden University, 2015

AAS, Fortis College, 2011

Project Submitted in Partial Fulfillment

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## Abstract

Healthy People 2020 identified hypertension (HTN) as a controllable risk factor to prevent cardiovascular disease and stroke. Adhering to regular antihypertensive (AHT) medications improves outcomes in patients diagnosed with HTN by controlling blood pressure, reducing hospital visits, and promoting patient wellness. Medication adherence occurs when prescribed medicine regimens are utilized by the patient as directed to manage illness or disease, as evidenced by patients receiving medications at their pharmacy. The practice-focused question for this quality improvement project asked whether implementation of health literacy tools from Million Hearts ® HTN Control: Action Steps for Clinicians, increased medication adherence as evidenced by regular medication pickups by adult hypertensive patients. Additionally, this project provided an assessment to identify the patient's current health literacy level using the Newest Vital Sign. The purpose of this quality improvement project was to improve health literacy about AHT medications to increase medication adherence in adults diagnosed with HTN. The logic model allowed for communication of resources, activities, and guidance during project implementation. Data related to medication pickups from adult participants, 1 male and 4 females aged 21-76, were analyzed using descriptive statistics via percent difference pre-post program. Results showed an 80% rate of medication adherence, however increased medication adherence was not achieved. Results also revealed a knowledge deficit in 20% of participants indicating they were unaware they had been prescribed combination AHT medication to control their blood pressure, and not knowing their most recent blood pressure results, or how their specific AHT medication regimen worked at controlling their HTN needs. These findings could lead to exploring additional underlying factors that impede medication adherence such as income, medication cost, insurance cost, and transportation needs. This project supports the need for health literacy to be addressed to improve knowledge and understanding about HTN, and implied the need to address the problem of low health literacy in patients with HTN. Implications for nursing practice include health literacy tools for community-based ambulatory clinics to influence medication adherence and self-care management of adults with HTN. Positive social change was demonstrated by providing health literacy to adult HTN population to improve medication adherence thus reducing health risk.

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# Dedication

This paper is dedicated to the patient population with hypertension. All of you have been a source of inspiration and encouragement. This population has given me the discipline and determination to address issues that are often overlooked within nursing practice in supporting their specific care needs. I also dedicate this paper to my mom—without you, this degree would not be possible—and to family and friends who have watched me work tirelessly to accomplish my goals thus far. I give a special thanks to Mark, who told me to keep at it. I love you, I thank you, and I wish good health and longevity to everyone who has been on this journey with me. I hope this paper contributes to effective changes that result in quality improvement implementation in the nursing practice and healthcare arena.

# Acknowledgments

I would like to thank Dr. Schweickert for the guidance, words of encouragement, and ongoing feedback throughout the doctoral program. Additional acknowledgment to Dr. Brooks and Dr. Whitehead for being supportive committee members. I’m very thankful for the ambulatory clinic and staff members for allowing this project to occur. It has taken a lot of sacrifice, time, and effort to complete this goal, but by faith and determination, I have persevered.

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Section 1: Overview of the Evidence-Based Project

## Introduction

Health literacy remains essential to healthcare delivery because it can influence self-care, medication knowledge, and medication adherence (Mosher, Lund, Kripalani, & Kaboli, 2012). Patients with hypertension (HTN) have a need to understand the disease, as well as for medication and lifestyle management interventions to support the achievement of treatment goals (Schapira et al., 2012). Health literacy can be used to address health care challenges within the patient population. According to the American Heart Association (2014), health literacy can improve patients' health status and knowledge of disease processes, in addition to reducing the risk of hospitalization. Health literacy can assist in managing and preventing the risk associated with HTN. HTN affects nearly 75 million adults in the United States (Madhur, 2014). As defined by the World Health Organization (2013), HTN involves systolic blood pressure of at least 140 mmHg or greater and diastolic blood pressure equaling 90 mmHg or more. The systolic blood pressure reading represents when the heart is contracting, and the diastolic reading represents when blood pressure is in a relaxed state. A normal blood pressure for an adult is below 120/80 mmHg (National Heart, Lung, and Blood Institute, 2015). When HTN is not controlled, it can contribute to health complications such as heart disease, blindness, aneurysm, stroke, kidney failure, premature mortality, and disability (World Health Organization, 2013). HTN is considered the greatest single risk factor for

the development of heart failure (Floyd, 2016). HTN continues to be an associated risk for cardiovascular disease (CVD), stroke, and renal disease (Zinat Motlagh et al., 2015). Globally, CVD accounts for 17 million deaths annually, and 9.4 million deaths are the result of HTN complications each year (World Health Organization, 2013). This doctoral project involved implementing a quality improvement program in an ambulatory clinic setting for an adult population whose members had been diagnosed with HTN, using health literacy to influence antihypertensive (AHT) medication adherence.

## Problem Statement

Medication adherence is an important aspect of efforts to reduce blood pressure (Alhalaiqa, Deane, Nawafleh, Clark, & Gray, 2012). The local nursing practice problem for this project was the need to improve HTN medication adherence in adults. Members of the HTN adult population are not consistently adhering to prescribed AHT medication regimens as part of self-care management in contributing to their health status in the community. The focus of this doctoral project was the use of health literacy education to influence AHT medication adherence for this identified population.

Nonadherence to AHT medication remains a risk factor for elevated blood pressure and contributes to CVD (Shaw & Bosworth, 2012). The issue of medication nonadherence was addressed to reduce health risks for the HTN population. Nonadherence to AHT medication was evident in HTN patients not picking up AHT medications from an onsite ambulatory clinic and community-based pharmacies.

HTN is projected to increase by 60% as 1.56 billion individuals will be newly diagnosed by 2025; optimal blood pressure control remains a challenge due to lack of AHT medication adherence (Jayasinghe, 2009). The Affordable Care Act (ACA) focuses on preventing chronic disease and improving public health by incorporating national prevention and health promotion strategies to assist in reducing health care costs, in addition to supporting medication management efforts, patient safety, and best practices (Lawson, 2014). This doctoral project holds significance for the field of nursing practice, in that it addresses the implementation of strategies that can increase medication adherence and reduce health care burdens.

## Purpose

The purpose of the doctoral project was to implement a quality improvement measure by initiating health literacy education to achieve AHT medication adherence in adult patients diagnosed with HTN. There remains a gap in nursing practice related to medication adherence in the HTN adult population. The rate of nonadherence to AHT medications was revealed to be 30.5% in adults diagnosed with HTN (Tong, Chu, Fang, Wall, & Ayala, 2016). In a recent study, it was noted that the nonadherence rate was the highest among patients with HTN in comparison to other medical conditions (Santra, 2015). A 2013 study revealed that nurses were not identifying patients who had low health literacy, which then contributed to nurses overestimating patients' health literacy skills, knowledge integration, patient care needs, and safety (Dickens, Lambert,

Cromwell, & Piano, 2013). Failure to acknowledge low health literacy within the patient population can have a negative impact on patient outcomes. Health literacy can influence the use of AHT medication, self-care management, and goal achievement in patients with HTN (Brown & Bussell, 2011). This project involved the use of health literacy educational tools in the ambulatory clinic environment to influence AHT medication adherence in the HTN adult population.

Low health literacy can impede medication adherence in individuals with disease processes such as HTN (Gazmararian et al., 2006). Health literacy plays a significant role in patients' ability to understand directions on medication labels (Jones, Treiber, & Jones, 2014). The guiding focused practice question for this project asked whether implementation of Health Literacy from Million Hearts ® Hypertension Control: Action Steps for Clinicians increases medication adherence, as evidenced by medication pickups in adults. For every 100 prescriptions written, only 48-60 are filled and picked up from the pharmacy (Department of Health and Human Services, 2013). When individuals develop an understanding of adherence with the use of AHT medications, they can improve their blood pressure results and reduce healthcare burdens (Elliot, 2009). Health Literacy from Million Hearts® Hypertension Control: Action Steps for Clinicians was used to address the practice focus question. This health literacy tool was used to guide the project's educational sessions and goal of increasing medication adherence within the adult hypertensive patient population.

This doctoral project has the potential to address a gap in nursing practice concerning medication nonadherence through the use of the Million Hearts® literacy tool to improve medication adherence through increased health literacy education related to AHT medications. Implementation of Health Literacy from Million Hearts ® Hypertension Control: Action Steps for Clinicians was used to influence medication adherence in adults diagnosed with hypertension in an ambulatory clinic setting. The doctoral project focused on the development and planning of a quality initiative from the Million Hearts® evidence-based practice approach.

## Nature of the Doctoral Project

Evidence and data were collected from patients in a pre-post project educational session design from 10 patients who had a diagnosis of HTN and used onsite or community-based pharmacies for obtaining AHT medications. Data were collected from the ambulatory setting's clinical information system (eClinical Works) and the onsite and community pharmacies to answer the project question. This doctoral project evaluated whether there had been an increase in the rate at which patients pick up new prescriptions or refills for AHT medications to support medication adherence. The pre-program data collection process was conducted after Institutional Review Board approval was received, but prior to program implementation. Post-program data collection occurred after project implementation for a period of 3 months. The data outcomes were analyzed by comparing whether there had been an improvement in the new prescription or refill rate

of patients picking up their AHT medications from the onsite and/or the community pharmacies 3 months before to 3 months after the program. This project aimed to determine if health literacy education related to AHT medications improves the rate at which patients obtain new prescriptions or refills of their AHT medications. The doctoral project used Health Literacy from Million Hearts ® Hypertension Control: Action Steps for Clinicians to address medication adherence in the adult hypertension population. The purpose of this doctoral project was to address the gap in AHT medication adherence in adults diagnosed with HTN. The findings from the data analysis were to support that patients who receive Health Literacy from Million Hearts ® Hypertension Control: Action Steps for Clinicians have an improved rate of medication adherence, as evident in the rate of AHT medication pickup from the pharmacy.

## Significance

The identified stakeholders for this doctoral project were members of the patient population who had been diagnosed with HTN, as well as nurses, physicians, and the onsite and community pharmacies that could potentially be impacted by addressing the local problem. This project assisted the HTN patient population in managing self-care and improving AHT medication adherence to reduce health risks. This doctoral project may guide nurses implementing interventions to assist with improving AHT medication adherence for the HTN patient population in order to achieve quality patient outcomes. This project may assist providers in supporting quality outcomes related to managing

HTN in the ambulatory clinic setting by improving AHT medication adherence. Further, the project may contribute valuable information on how pharmacies interact with healthcare providers to support medication adherence by developing or suggesting tracking systems that reflect patient medication refill rates to improve quality outcomes in the healthcare environment.

The HTN population may benefit from participation in a health literacy program to improve medication adherence (Department of Health and Human Services, 2013). HTN is a significant public health concern. When the disease is not controlled, it can lead to health issues such as heart disease, vision problems, kidney failure, and morbidity (Shrivastava, Shrivastava, & Ramasamy, 2014). Medication adherence is pivotal in the management of HTN to improve control of blood pressure and to reduce the risk of stroke and CVD (Alhalaiqa, Deane, Nawafleh, Clark, & Gray, 2011). In order to support the Healthy People 2020 goal of managing HTN, there is a need for interventions to assist in improving medication compliance (Shaw & Bosworth, 2012). This doctoral project has the potential to contribute to nursing practice by improving HTN medication adherence and influencing patient knowledge through health literacy. This doctoral project may be transferable into other ambulatory clinic settings to provide health literacy in relationship to medication adherence in the HTN population. Active engagement with the HTN population can promote self-management behaviors (Douglas & Howard, 2015). Health literacy helps people make informed decisions. Health literacy efforts involve the

dissemination of health and safety information and the promotion of adult education to improve quality of life for millions of people living in the United States (U.S. Department of Health and Human Services & Office of Disease Prevention and Health Promotion, 2010). This quality improvement initiative focused on health literacy influencing AHT medication adherence in order to support positive social change by reducing health risks for patients with HTN.

## Summary

Health literacy is vital to medication adherence. This evidence-based doctoral project evaluated whether health literacy influences medication adherence in an identified HTN population. Identifying a problem in nursing practice related to patient health literacy provided a foundation for implementing a quality improvement doctoral project. This doctoral project entailed the implementation of Health Literacy from Million Hearts ® Hypertension Control: Action Steps for Clinicians to influence medication adherence in adult patients diagnosed within HTN in an ambulatory clinic setting.

In Section 2, I discuss the background and context of the project, including the model used to inform the project, the importance of improving HTN outcomes, and my role as a DNP student and as a member of a healthcare team in the project.

Section 2: Local Background and Context

## Introduction

The practice problem that I addressed through this project involves AHT medication adherence within the HTN population in an ambulatory clinic setting. The practice question concerned whether implementation of Health Literacy from Million Hearts ® Hypertension Control: Action Steps for Clinicians enhances AHT medication adherence as evidenced by new prescriptions or refill pickups of AHT medication from a pharmacy. The purpose of this doctoral project was to implement a health literacy quality improvement project that would contribute to improving medication adherence in the adult HTN population. In this section, I discuss the model that provided support to the doctoral project in relationship to nursing practice, along with information on the local background and context for the project. Additionally, I review my role and the project team's role in conducting the program.

## Concepts, Models, and Theories

### The Logic Model

The logic model aligned with the doctoral project by focusing on the processes, resources, and outcomes that occur from program implementation. The logic model allowed for the evaluation of efforts to increase medication adherence in hypertensive patients through the use of Health Literacy from Million Hearts ®. The logic model incorporates inputs, implementation of activities, measuring of outputs, and achievement

of outcomes (Sherman, 2016). The inputs in this case were the collaborative efforts of ambulatory clinic team members in supporting this doctoral project's use of Health Literacy from Million Hearts® to address AHT medication adherence in HTN adults, as well as the participation of adult HTN patients. The implementation of activities took place in the form of data collection from medical and pharmacy electronic records and health literacy sessions available to HTN patient participants to influence medication adherence. Measurement of outputs occurred through an analysis of the rate at which patients picked up their AHT medications from the pharmacy pre and post project implementation. Data analysis was used to provide evidence supporting this practice initiative. The logic model was used to provide a summary of the program that was implemented and activities that occurred during a 6-month project initiative.

Clarification of terms used in the doctoral project that may have multiple meanings is provided to assist readers' understanding of the project. These terms are listed below.

*Million Hearts® Program:* An evidence-based practice initiative that focuses on improving medication adherence, reducing risk of heart attacks and strokes, and improving blood pressure control (Melnyk et al., 2016).

*Hypertension (HTN):* Blood pressure of at least 140/90 mm Hg, which can impact an individual's health status in a negative manner (World Health Organization, 2013).

*Antihypertensive (AHT) medications:* Medications used to manage hypertension

and to reduce health risks associated with elevated blood pressure (Felicilda-Reynaldo & Kenneally, 2015).

*Medication nonadherence:* Can range from a patient taking medication differently than has been prescribed to a patient not taking any of a prescribed medication (Alhalaiqa, Deane, Nawafleh, Clark, & Gray, 2014).

*Health literacy*: Skill, comprehension, motivation, and ability a person has to access, understand, appraise, and apply information to make decisions that contribute to health status (Johnson, 2015).

*Newest Vital Sign:* A health literacy assessment tool that can be administered in healthcare settings to patients (Shealy & Threatt, 2016).

*Patient education:* Information that patients can understand, which may assist in care management, patient satisfaction, and quality of life improvement (Garshasbi, Khazaeipour, Fakhraei, & Naghdi, 2016).

*Health education programs*: Programs that facilitate promoting healthy lifestyle, physical activity, and quality of life (Hălmăjan, 2014).

*Low health literacy:* An impediment to using and understanding health care information and services (Byrant, 2011).

*Affordable Care Act:* Legislation that has been implemented to assist additional Americans in receiving quality care access and cost containment in the health care system (Onieal, 2016).

*Healthy People 2020:* Initiative aimed to promote wellness and quality of life by use of priority setting and interventions at the federal, state, and local levels within community settings (Fielding, Kumanyika, & Manderscheid, 2013).

## Relevance to Nursing Practice

Nurses have a significant role in reducing adverse health outcomes that occur from health literacy barriers and medication nonadherence as they can educate patients and improve AHT medication adherence (Jayasinghe, 2009; Jones, Treiber, & Jones, 2013). There is a need for health education on medication usage to improve patients' prognoses, disease status and to assure that medications are used properly. Health literacy is needed to manage chronic disease processes in the patient population (Fitzgerald & Poureslami, 2014; Hsueh-Yun et al., 2012). Suboptimal compliance with AHT medication can contribute to CVD outcomes and increase medication costs (Grassi, Seravalle, & Mancia, 2011). Deficiencies in patient knowledge concerning management of HTN contribute to poor medication adherence, lack of understanding of HTN risk, and uncontrolled HTN (Lambert et al., 2014; Morgado, Rolo, Macedo, Pereira, & Castelo-Branco, 2010). Medication nonadherence in patients diagnosed with HTN has health and financial implications. The Centers for Disease Control and Prevention (2015) have revealed that uncontrolled HTN costs the United States $46 billion each year, as well as 1,000 daily deaths from HTN. This doctoral project involved the implementation of Health Literacy from Million Hearts ® Hypertension Control: Action Steps for Clinicians

to evaluate whether it contributes to improving AHT medication adherence. Nurses are in a vital position to influence and contribute to medication adherence and health literacy in HTN patients.

Existing scholarship and research indicate that patient education and collaboration can support the achievement of desirable outcomes and enhance patients' understanding of the purpose of their medication regimen (Hardy, 2009). Low health literacy is a major concern within the healthcare system. Patients with low health literacy levels remain at risk of greater use of emergency rooms and hospital readmissions (Sand-Jecklin, Murray, Summers, & Watson, 2010). Nurses must take an active part in providing patients with valid information to support medication and disease management (Squellati, 2010). Inadequate medication adherence and low health literacy impact HTN control management (Ogedegbe, 2008). Nurses can empower patients to manage their diagnoses by raising awareness and offering educational information from which patients can benefit (Cross, 2011). Per Squellati (2010), when patients lack understanding of instructions they receive from medical providers, they are less likely to adhere to plans of care and may experience hospital readmissions. Cross (2011) noted that those in the nursing practice role can be instrumental in providing patients with information on prescribed medications to support self-care management. A study conducted by Ogedegbe (2008) revealed that over an 18-month period, the HTN medication adherence rate dropped to 56% among patients who were newly diagnosed with HTN. Sorensen et

al. (2013) suggested that health literacy education needs to be made accessible to patients to assist them with informed decision making and disease prevention. Bailey, Oramasionown, and Wolf (2013) contended that it is necessary to understand patient roles and responsibilities in the outpatient setting in order to promote effective medication adherence.

This doctoral project centered on using health literacy to improve AHT medication adherence in patients with HTN. It has been standard practice that patients use prescribed medications as part of HTN self-care management to contribute to health status (Bailey et al., 2013). Little evidence has been published that focuses on nurses' knowledge of health literacy and its contribution to patient outcomes; such information could support efforts to close the health literacy gap (Macabasco-O'Connell & Fry Bowers, 2011). This doctoral project used health literacy as an intervention in addressing medication adherence within the HTN adult patient population. This doctoral project may advance nursing practice through the implementation of Health Literacy from Million Hearts ® Hypertension Control: Action Steps for Clinicians, using strategies to improve medication adherence by providing educational patient encounters to contribute to patients understanding the benefits of taking their medications as prescribed. Action steps such as limiting medication information to key points, having educational material available in different forms, and providing patients with incentives when goals are achieved can facilitate medication adherence (Department of Health and Human

Services, 2013).

## Local Background and Context

Local evidence within the ambulatory clinic environment indicated the importance of health literacy in nursing practice. In the context of this project, there were patients who had been diagnosed with HTN who had not consistently adhered to their AHT medication as prescribed, as evidenced by patients not picking up their AHT medication refills from the pharmacy located at the ambulatory clinic and pharmacies in the local community. The local evidence justified addressing health literacy in the ambulatory clinic setting to influence medication adherence, increase patient knowledge, and reduce health risks in the adult HTN population. Data were collected to determine whether implementing Million Hearts ® Hypertension Control: Action Steps for Clinicians increases ATH medication adherence. The practice setting for this project was a nonprofit ambulatory clinic located in the southeastern United States. The mission of the organization is to provide safe, comprehensive, high-quality care in a manner that is culturally sensitive. The organization's strategic vision involves remaining viable in the community by providing needed care services to a diverse patient population with complex health care needs.

The practice environment included physicians, a physician assistant, nurse practitioners, licensed practical nurses, and a registered nurse. The patient population that used the clinic consisted of people from underserviced areas located in this region. The

clinic provides care to patients who are insured, underinsured, noninsured, and private payers. Demographic data on the clinic population indicated that clinic patients were adults of African American, Caucasian, and Hispanic ethnicity. More than half of the individuals within the clinic population had diabetes and/or HTN. These patients were offered additional services from case management to support the challenges of living and coping with a lifelong disease process. Healthcare services were provided to patients 5 days per week using a collaborative, patient-centered team approach. The ambulatory clinic was regulated by managed care and accountable care organizations (ACOs).

The Patient Protection and Affordable Care Act (PPACA) focuses on patient-centered care, health literacy, and engagement within health care systems (Frosch & Elwyn, 2014). Provisions within the PPACA support the implementation of health literacy within the health care system. Health literacy affects public and private organizations and health policies (Ratzan, 2013).

## Role of the DNP Student

This Doctor of Nursing Practice (DNP) project explored whether implementation of Health Literacy from Million Hearts ® Hypertension Control: Action Steps for Clinicians increases medication adherence. This quality improvement project explored health literacy in the hypertensive population to improve patient outcomes. As a DNP student, I implemented and evaluate the project. During my practicum experience, I identified a gap in health literacy and sought to use a quality improvement project to

address the practice issue of medication adherence in the adult HTN population. In my own clinical practice, I had witnessed patients with blindness, CVD, and renal failure that could have been avoided through health literacy and adherence to AHT medications to control HTN. Therefore, I used my role in this project to assess this program's ability to improve medication adherence in the adult HTN population as evaluated via medication pickup rates.

## Role of the Project Team

The project team was used to assist with planning, implementation, and evaluation of the doctoral project. This doctoral project team provided interdisciplinary health care in the ambulatory clinic setting. The doctoral project team members were presented with background information and weekly updates on project progression. The team consisted of a nurse practitioner for consulting on the HTN population, a case manager to assist with data collection on HTN patients, and pharmacists in the pharmacy department to provide the refill rate of AHT medications. Each team member shared expertise to support the progression of the DNP project.

The use of a timeline assisted in keeping the project on target. The timeline for the project was 3 months and 2 weeks, which included retrospective data collection on 3 months of predata and collection of 3 months of post-project-implementation data, in addition to 2 weeks for educational sessions. I provided updates to the project team weekly until the project had concluded. Each team member reviewed the activities that

occurred during the week and contributed to finishing the project in a timely manner. A timeline assisted in providing clarity regarding activities that were accomplished within a specific amount of time to achieve project implementation and completion.

## Summary

The gap in practice that I sought to address through this project was identified as adult patients being nonadherent to HTN medications. Health literacy is an important aspect of the provision of quality patient care in the health care environment. The DNP project focused on using Health Literacy from Million Hearts ® Hypertension Control: Action Steps for Clinicians to evaluate whether it improved medication adherence within the targeted HTN adult population, as this was evident in the process of data collection and analysis of evidence. The project team was used for sharing knowledge and keeping the project progressing toward completion. In Section 3, I address the sources of evidence used for this project, along with analysis and synthesis of findings to support and guide the doctoral project.

Section 3: Collection and Analysis of Evidence

## Introduction

The problem of medication adherence continues to be a challenge in relation to the HTN adult patient population. Nonadherence to AHT can contribute to negative health outcomes. The purpose of this DNP project was to improve AHT medication adherence in the HTN adult patient population through the use of health literacy tools from Million Hearts ® Hypertension Control: Action Steps for Clinicians. This project took place in a local outpatient ambulatory clinic environment. The ambulatory clinic provided care to adult patients in the southeastern United States. In Section 3, I address the collection and analysis of evidence to answer the practice-focused question.

## Practice-Focused Question

The local practice problem was AHT medication nonadherence in the adult HTN population. Inadequate health literacy can impede the comprehension of medical care instructions, such as those that HTN patients receive, as well as patients' efforts to refill medications (Cornett, 2009; Gazmararian et al., 2015). Medication adherence contributes to effective management of HTN, reducing health risks such as CVD, stroke, blindness, and kidney disease. The practice-focused question concerned whether implementation of Health Literacy from Million Hearts ® Hypertension Control: Action Steps for Clinicians influenced medication adherence in adult patients diagnosed within HTN in an ambulatory clinic setting. The purpose of the DNP project was to implement a quality

improvement initiative to address nonadherence to AHT medication in adults diagnosed with HTN.

## Sources of Evidence

The collection and analysis of evidence for this project provided an appropriate way to address the practice-focused question. By collecting and analyzing data, I gathered supportive evidence to implement interventions to improve medication adherence in the adult HTN population. The sources of evidence used to address the practice-focused question were ambulatory clinic electronic health records and pharmacy data for patients diagnosed with HTN. These data reflected the rate at which AHT medications were being refilled and picked up by patients. Prescription data from onsite and community pharmacies used by the participants provided evidence of the pickup rate of AHT medications. The prescription data included quantity of AHT medication, last refill of medication, pickup date of medication, and days lapsed in pickup of medication. Additional operational definitions were patient demographic information from the eClinical Works information system, which included gender, race, age, marital status, insurance status, and whether participants were using an onsite or community-based pharmacy for medication pickups. Medical data were used to ensure that participants had a diagnosis of HTN. Operational data were collected from health literacy sessions to show the percentage of participants attending them. These data were used to determine whether health literacy influenced AHT medication adherence in the ambulatory clinic

environment among those diagnosed with HTN.

Additional sources of evidence were drawn from scholarly journals. I conducted a literature review to address the practice problem. Data collection and analysis of the evidence occurred at the beginning of the project and for 3 months after program implementation. The DNP project allowed for retrospective data collection and post data collection on 10 adult individuals who had been diagnosed with HTN. The evidence was used to determine whether health literacy education improves the rate at which patients adhere to their ATH medications, as indicated by the refill rate of ATH medications at the pharmacies that patients use.

## Published Outcomes and Research

Databases and search engines used to find outcomes and research related to the practice problem included Academic Search Complete, ProQuest Central, Thoreau Multi-Database Search, CINAHL & MEDLINE Simultaneous Search, Cochrane Database of Systematic Reviews, ERIC, Education Research Complete, Joanna Briggs Institute EBP Databases, Centers for Disease Control and Prevention Interactive Data Base Systems, Taylor Francis Online, EBSCOhost, Sage Premier, and Google Scholar. Key search terms included *health literacy*, *American Heart Association*, *medication adherence, patient education*, *health literacy strategies*, *adult hypertension*, *high blood pressure*, *Healthy People 2020*, *Affordable Care Act*, *hypertension education*, *Health Literacy tools from Million Hearts ® Hypertension Control: Action Steps for Clinicians*, *hypertension*

*interventions*, *low health literacy barriers*, *adult educational styles*, and *adult education*. The scope of this review was limited to literature no more than 7 years old. Literature was drawn from peer-reviewed scholarly journals and nationally recognized programs that promote medication adherence and/or health literacy for the adult population. There were 54 articles found, 42 of which were used for this literature review. The included articles were related to efforts to use health literacy to influence medication adherence in adults with HTN and/or other chronic disease processes that had evidence of quality improvements. Articles excluded from the review were those that did not contribute to or focus on the nursing practice problem in this doctoral project. The literature reviewed pertained to topics such as HTN and CVD statistics and overall effect, low health literacy, the use of Newest Vital Sign to assess health literacy, HTN risk related to nonadherence to AHT medications, nurse lead interventions, and current programs that support quality outcomes in patients with HTN.

## Literature Review

### Introduction

The practice problem was lack of adherence to prescribed AHT medication in the HTN adult population. The practice-focused question concerned whether implementation of Health Literacy from Million Hearts ® Hypertension Control: Action Steps for Clinicians influences medication adherence in adult patients diagnosed within HTN in an ambulatory clinic setting. Evidence suggested that low health literacy contributes to

patients' nonadherence to AHT medications. Often, patients' health literacy is overestimated, which can contribute to patients having a lack of understanding of medication instructions, as well as to hospitalizations and poor health outcomes (Dickens, Lambert, Cromwell, & Piano, 2013). Nonadherence to AHT medications is a global issue that must be addressed within the targeted patient population (Al Ghobain et al., 2016). Nonadherence to AHT medications impedes patient safety, and quality care is placed in jeopardy when prescribed medications are not adhered to. Additional evidence has revealed that health literacy is a factor to consider when attempting to improve adherence to prescribed AHT medications in the adult population (Saleem et al., 2013). Furthermore, low health literacy contributes to adult patients' lack of knowledge of modifiable risks associated with HTN management (Moore, Smith, & Reilly, 2013). Low health literacy presents a barrier to patient's knowledge of prescribed medications and self-care management (Matthews, Shine, Currie, Chan, & Kaufman, 2012). Low health literacy can affect patients' understanding and management of their own disease processes, including adherence to daily medication regimens to manage HTN. Other evidence supports the use of nurse lead interventions to promote and achieve quality improvements in the clinical setting. Nurses have an integral part in supporting patients' health literacy to fulfill their educational and safety needs (Dickens et al., 2013). For this literature review, I analyzed evidence from articles that supported the foundation of this doctoral project, which involved implementing Health Literacy from Million Hearts ®

Hypertension Control: Action Steps for Clinicians to influence medication adherence in adult patients diagnosed within HTN in an ambulatory clinic setting. The findings here were used as a foundation for implementing a quality improvement project to address nonadherence to AHT in the HTN patient population.

**Hypertension and Cardiovascular Statistics and Overall Effect**

Annually the complications of HTN lead to 9.4 million deaths globally (World Health Organization, 2013). HTN is a noncommunicable disease that remains a prevalent public health issue. Statistical data from the World Health Organization indicate that 40% of adults worldwide who are at least 25 years of age have been diagnosed with HTN. There is a need to incorporate strategies that will help to reduce CVD trends in the HTN population (Zou et al., 2015). The World Health Organization projects that if nonadherent behaviors continue in the HTN population, the occurrence of CVD will increase, accounting for 24% of the adult mortality rate by 2030. This doctoral project provided the opportunity to implement Health Literacy from Million Hearts ® Hypertension Control: Action Steps for Clinicians to influence quality outcomes and reduce negative health implications for the adult HTN population.

**Low Health Literacy in the Hypertensive Patient Population**

At least 36% of Americans have low health literacy skills, which contribute to reduced medication adherence and increased patient admissions to emergency departments (Agarwal, Shah, Stone, Ricks, & Friedlander, 2015). For the HTN patient

population, low health literacy can interfere within patients' understanding of information. Evidence of low health literacy provides an opportunity for quality improvements to take place within the HTN patient population. Currently in this ambulatory clinic setting, there has been no program implemented that focuses on the targeted HTN patient population in addressing health literacy to influence AHT medication adherence, yet medication adherence remains a prevalent issue for the HTN population at this ambulatory clinic site. The effects of low healthy literacy cost between $106 and $238 billion annually (Agarwal et al., 2015). Additional costs stemming from low health literacy in the patient population cannot be overshadowed in this ambulatory clinic setting, as low health literacy has the ability to affect patients' ability to comprehend information regarding managing their AHT medication. Efforts to address low health literacy can bridge gaps in patients' understanding of health information, contributing to informed decision making and self-care (Egbert & Nanna, 2009). Literature provides a considerable amount of evidence that low health literacy results in the inadequate understanding of prescription medication by the patient population (Berkman, Sheridan, Donahue, Halpern, & Crotty, 2011). Because there are patients with HTN in the ambulatory clinic who are nonadherent to their AHT medications, health literacy interventions could be implemented at the ambulatory clinic to support patients' understanding of AHT medications. Evidence from a cross-sectional study of 359 patients indicated that at least 53% of patients did not understand directions on

prescription labels, such as those pertaining to dosage and how often medications should be taken (Davis, 2009). The results of this study indicate a need to use strategies with the HTN patient population that will improve health literacy related to prescription medication to support AHT adherence. Addressing health literacy can assist patients in understanding information presented on AHT prescription labels to support medication adherence.

Health literacy is required to influence patients' understanding of their medication regimens to support AHT medication adherence in the HTN patient population. Evidence from a systematic random sample of 653 patients aged 32-84 focused on patients with HTN in the primary care setting. It was discovered that nonadherence was a result of patients obtaining inadequate knowledge of medications and disease processes related to self-care of HTN (Ramli, Ahmad, & Paraidathathu, 2012). This study highlighted that when patients are nonadherent to their medication regimens, risk for increasing the number of medications and dosage is significant in efforts to manage patient's health status. To contribute to effective health management in the patient population, initiatives must be implemented to improve patients' knowledge and understanding of their medication regimens. Health literacy education can be used to support patients in comprehending how AHT medications are used to control blood pressure and reduce negative health implications.

The adult HTN population remains at risk as a result of not having the ability to

understand information and manage self-care needs related to their hypertensive status. In a cross-sectional survey of 197 patients with HTN diagnoses aged 18 and up, it was found that 40.6% lacked comprehension of AHT medications' implications, as participants acknowledged deficits in their understanding of HTN risk and blood pressure concepts (Morgado, Rolo, Macedo Pereira, & Castelo-Branco, 2010) The study indicated a need to use health care professionals to implement interventions to reduce negative health impacts within the patient population and to contribute to medication adherence. Within an additional sample population study of 330 HTN patients, it was found that health literacy is needed for patients to retain information related to health care needs and to support self-efficacy (Clayman et al., 2010). This doctoral project centered on evaluating whether the use of Health Literacy from Million Hearts ® Hypertension Control: Action Steps for Clinicians influences medication adherence in adult patients diagnosed with HTN. Health literacy education was used as a tool to help individuals diagnosed with HTN to understand basic information related to prescribed AHT medication in order to improve medication adherence. There is a growing need for health care consumers to acquire health literacy to support self-care and understanding of complex health care information (Johnson, 2014). For patients to improve their health literacy status, health care professionals must implement changes in practice. There remains a push for patients to become more involved with managing self-care. Low health literacy is considered a barrier to self-care management for chronic conditions

(Baumann & Dang, 2012).

**Newest Vital Sign to Assess Health Literacy**

Newest Vital Sign (NVS) has been used as a tool to assess health literacy in patients in various health care settings (Shealy & Threatt, 2016). NVS can support individuals with low and limited health literacy to reduce negative health outcomes. In a cross-sectional study, the NVS tool identified 329 patients who had limited literacy within a hospital emergency department setting (Griffey, 2014). NVS can be administered in 3 minutes, in which the patient answers six questions related to information located on an ice cream nutritional label. The six questions found in the NVS tool can be used to assist health care professionals in assessing a patient's understanding related to health care information. A study that evaluated NVS concluded that it performed moderately well in identifying limited health literacy in adult patients (Powers, Trinh, & Bosworth, 2010). Scores for the NVS assessment tool range from 0 to 6, with a score of less than 2 representing limited health literacy. NVS was used in a study of 238 patients in a primary care setting who had a diagnosis of HTN, in which it was concluded that 51.5% had limited health literacy, as evident from NVS scores of less than 2 (Warren-Findlow et al., 2014). Per Shealy and Threatt (2016), NVS can be used for adults with challenging health care needs to develop interventions that will reduce health care burdens by addressing patients' health literacy needs. The NVS tool aligned with this doctoral project, in that it shares the project's purpose of identifying patients

who have inadequate health literacy and supporting implementation of quality improvements to address this issue.

**Risk Related to Nonadherence to AHT Medications**

There are risks associated with nonadherence to prescribed AHT medications in the HTN patient population (Yue, Bin, Weilin, & Aifang, 2015). Nonadherence to AHT medications places patients in jeopardy of debilitating conditions such as CVD, renal failure, and stroke. Medication nonadherence is a problem in healthcare that leads to patients developing damage to blood vessels, kidneys, and eyes, as well as CVD (Khan, Shah, & Hameed, 2014). Nonadherence to AHT medication was present within the local clinical practice, as I had witnessed nonadherence to AHT medications manifested by patients not picking up their refills or new prescriptions of AHT medications from the onsite pharmacy to manage their HTN diagnoses.

Within the first year of using a prescribed medication, 50% of patients stop taking the prescription prior to seeking medical advice (Shaik et al., 2016). In the local ambulatory clinic setting, HTN patients may not obtain AHT medication to manage their medical condition, despite all of the negative health implications of AHT noncompliance. At the onsite clinical pharmacy, prescribed AHT medications remain on the shelves and are not picked up by members of the at-risk adult HTN patient population. Patient nonadherence to AHT medications places a strain on resources within the healthcare system. When patients are nonadherent to medication it compromises reimbursement

incentives for health care organizations (Stefanacci & Guerin, 2013). AHT medication adherence has become increasingly complex to manage in this ambulatory clinic patient population, as there have been unsuccessful attempts to refer many within the HTN population to case management to improve AHT medication adherence. There remains a need to improve AHT medication adherence among members of the HTN adult patient population who use the ambulatory clinic. Medication nonadherence contributes to poor control of the disease process and can exacerbate the patient's current condition (Lin et al., 2012). To clearly support medication adherence and self-care management, patients must pick up their AHT medication from the pharmacy. By addressing nonadherence in the HTN adult patient population, it is possible to diminish negative health outcomes. The problem of nonadherence to HTN within the ambulatory clinical setting must not be overlooked; it places patients at risk for negative health outcomes and compromises resource availability in the healthcare system.

The benefits obtained from AHT medication adherence were discovered in the late 1950s in managing patients with HTN diagnoses and remains relevant today (Chobanian,2016). AHT medication is used to support blood pressure control and reduce negative health implications within the targeted patient population. Pharmacy claims data have revealed that at least 80% of patients with HTN diagnoses are nonadherent to their prescribed AHT regimens (Nair et al., 2011). Strategies must be used in the ambulatory clinic environment to assist in promoting HTN patients' understanding of the benefits of

medication adherence and to support self-care management to influence AHT adherence. Evidence indicates that HTN is a modifiable risk that can be controlled to reduce the national epidemic of CVD (Healthy People 2020, 2016). A modifiable risk is one for which strategies can be implemented to reduce negative health implications in the patient population. Within the ambulatory clinic setting, it is important that patients gain an understanding that management of their HTN diagnoses is supported by implementing changes that support adherence to AHT medications to promote wellness.

The use of strategies to influence medication adherence in the HTN patient population has the potential to diminish health risks. A cohort study (Chenglin et al., 2013) focused on raising awareness of dangers associated with uncontrolled HTN, which places patients at a profound risk for CVD, reported that 54% of participants with a diagnosis of HTN benefited from attending educational intervention sessions to improve adherence to prescribed medications and lifestyle modifications to control elevated blood pressure. The educational intervention used in this study can be incorporated within the implementation process of a quality improvement project at this ambulatory clinic environment to influence AHT adherence in the targeted patient population. Furthermore, the use of patient education aligns with the purpose of this doctoral project in implementing Health Literacy from Million Hearts ® Hypertension Control: Action Steps for Clinicians to influence medication adherence in adult patients diagnosed with HTN. Implementing a quality initiative that uses health literacy addresses the practice problem

of medication adherence in the ambulatory clinic setting.

AHT medication adherence is needed to reduce HTN patients' risk of being admitted to the hospital to manage conditions that have occurred because of nonadherence to AHT medications. Evidence from a 7-year study (Will, Zhang, Ritchey, & Loustalot, 2016) indicated that nonadherence to AHT medications contributed to 6,009 preventable hospitalizations for patients with HTN in the United States. The message conveyed from this study is when AHT medication adherence remains unaddressed, it burdens the patient population and healthcare industry with avoidable costs. Medication nonadherence is a vital issue, given that it contributes $100 to $300 billion annually in avoidable care costs (Iuga & McGuire, 2014). It is essential for patients to understand that treatment of HTN includes the use of AHT to lower blood pressure, thereby preventing negative health effects. Patients must receive knowledge about HTN and AHT medication to achieve adherence in order to support HTN control (Karaeren et al., 2009). If medication adherence in the HTN patient population is not addressed, patients' health will continue to be compromised.

**Nursing Interventions**

Often, patients do not understand the implications of medication regimen nonadherence in terms of their health status (American Heart Association, 2016). This is evident in the ambulatory clinic, where HTN patients are not adhering to their AHT medications, as seen in failures to pick up prescribed medication from the onsite

pharmacy department. There is an opportunity for nurses to support adherence in the identified patient population. Evidence gathered from a 6-month study of medication refill rates revealed a significant increase in these rates, from 43% to 54%, with the use of educational interventions by health care professionals, including nurses (Ahmed, Aiash, & Abdel-Wahid, 2016). The conclusion of this study is that interventions can be used in the health care setting to assist patients in becoming knowledgeable about AHT medications, thereby contributing to medication adherence and self-care management of HTN in the targeted patient population. The issue of patient nonadherence to AHT medications within the current ambulatory clinic setting must be addressed to contribute to adherence and reduce the risk of negative health status.

Nurses can use their role to address low health literacy within the patient population (Protheroe & Rowlands, 2013). Nursing interventions can support AHT medication adherence in the HTN patient population in this ambulatory clinic setting. Nursing interventions may be used to enhance patient knowledge, prevent illness, promote the management of disease, and support positive outcomes (Bulechek, Butcher, Dochterman, & Wagner, 2013). There is an overwhelming need to incorporate strategies in the practice setting, to impart patients with knowledge, self-care skills, and understanding of the importance of medication adherence to assist with HTN management in achieving quality improvements and patient outcomes (Torres, 2016). Nurses are well positioned in using evidence-based practice to support the patient

population and promote adherence to AHT medications in order to achieve wellness. This doctoral project used clinicians to improve patient-focused outcomes. This doctoral project was centered on using Health Literacy from Million Hearts ® Hypertension Control: Action Steps for Clinicians to evaluate whether it influences medication adherence in adult patients diagnosed with HTN.

Utilizing interventions that can engage and address the needs in the targeted population are essential in achieving quality outcomes. Evidence from a randomized clinical trial study incorporated workshops to engage 113 participants with HTN on topics which included orientation, HTN Control, Benefits of Health Lifestyle, Effects of HTN, and Medication Adherence, the results reveled adherence increase by 9.6% in the patient population (Kuhmmer et al., 2016). The topics within this study could be presented by a nursing professional to improve patient outcomes within the current ambulatory clinic setting to influence AHT medication adherence. This study included that tools such as pictures, posters, videos, and practical illustrations to support interventions in achieving medication adherence.

Nurse can incorporate teaching strategies to captivate the various learning styles seen within the patient population (Blevins, 2014). Nurse led interventions were used in a pilot study to influence 48 patients that had medical diagnoses of diabetes, kidney disease, and HTN to support medication adherence and to assist in patient engagement in their personal wellness (Williams, Manias, Liew, Gock, & Gorelik,2012). Research

supported the use of communication and handbooks as tools to facilitate health literacy regarding medication adherence for adults ages 60-70 years old with HTN in primary care settings, to provide patient knowledge and health information to improve adherence (Wannasirikul, Termsirikulchai, Sujirarat, Benjakul, & Tanasugarn, 2016). This doctoral project used health literacy as an intervention to improve AHT medication adherence in the HTN adult patient population.

## Program Supporting Medication Adherence in the Patient Population

There are various challenges within the ambulatory clinic practice setting that can influence and impact patient's health status such as health literacy. A Million Hearts® uses evidence-based interventions in efforts to reduce stroke and heart attacks (Ferdinand et al., 2012). The interventions were implemented within the doctoral project assist within influencing medication adherence in the current HTN patient population. It's important to utilize program initiatives that can address the issues of AHT medication adherence in the targeted patient population. A Million Hearts® initiative emphasizes on the use of interventions to reduce negative health complications such as heart attacks and stroke (Melnyk et al., 2016). A Million Hearts® uses strategies to improve medication adherence while integrating nurses to use education to improve management of HTN, and other chronic diseases. Per Melnyk et al. Million Hearts® utilizes guidelines and best practices to promote health wellness and disease prevention. A Million Hearts® focuses on evidence-based deliverables, effective interventions that highlight population

healthcare to improve outcomes and reduce CVD risk (Gawlik & Melnyk, 2015). This doctoral project focused on utilizing Health Literacy from Million Hearts ® Hypertension Control: Action Steps for Clinicians to improve the rate of AHT medication adherence in the targeted HTN patient population within the ambulatory clinic setting. According to the Department of Health and Human Services (2013) a Million Hearts® initiative aims to achieve medication adherence by empowering patients with health literacy tools and tested strategies to improve understanding of HTN. The health literacy tools were in the form of videos, posters, and hand-outs within individual educational sessions to support achieving medication adherence.

## Million Hearts®

A Million Hearts® teaching is at the core of this doctoral project. A Million Hearts® places focus on preventing heart attacks and strokes within the community. A Million Hearts® uses clinical best practiced based on evidence to improve patient education and wellness in the community (*Nursing Outlook, 2016).* Million Hearts® supports initiatives that encourage population health such as patient self-care management, and health literacy to contribute to quality improvements (Wright, Wall, Briss, & Schooley, 2012). A Million Hearts® provides healthcare providers with health literate appropriate tools that can influence patient education on HTN and strategies to reduce health risk. This doctoral project utilized teaching tools from a Million Hearts® including videos and information which were presented to patients in a manual, the

topics listed here are *Blood Pressure Basics Video, Treating High Blood Pressure Video, Gail's Million Hearts® Story Video, Medication Wallet Cards, High Blood Pressure Medications and You Infographic, Know the Facts about High Blood Pressure, Snapshot of Blood Pressure in the United States, Myth or Fact: Truth about Cardiovascular Medications, Sodium—Tracking Down the Salt in Food, ABCs of Heart Health, Cost and Consequences, Risk for Heart Disease and Stroke, and High Blood Pressure How to Make Control Your Goal*. The information present in the videos and manual will be used to influence patient AHT medication adherence. This information is located in the appendix of this doctoral project. Nurses have a vital role in a Million Hearts® initiative to prevent disease process, and management chronic and acute disease process, and promote wellness within the patient population (Melnyk, 2016). Million Hearts® supports integrating educational programs to improve medication adherence and efforts to control HTN to reduce negative health implications. Mentioned by *Nursing Outlook* Registered Nurses can contribute to the practice and education that occurs in the community and across an individual's lifespan to promote reducing cardiovascular risk.

This search has provided information for in depth knowledge to understanding the identified practice problem of medication adherence in the adult population diagnosed with HTN. Concepts, models, and theories were used to provide relevant scholarship to the nursing practice problem this DNP project addressed. Evidence in the studies provided resource integration, and recommendation that can be utilized within the clinical

practice environment to support study findings.

## Archival and Operational Data

The nature of the data collected from the eClinical Works information system, was used to provide information on the 10 candidates that had volunteered to be a part of the DNP project. Information collected from eClinical Works was the HTN patient population including their de-identified demographical information. Demographical information was collected to support the doctoral project are candidates gender, race, insurance status, age, marital status, and if they use a community-based pharmacy or the clinic pharmacy for medication pickups. Additional sources of information were provided from onsite and community-based pharmacies where those identified patients have their AHT medications filled. Data was collected from the pharmacies were on AHT medications new prescriptions and occurrence of refills. The justification of the relevance of the data collection support answering the question if Health Literacy tools from Million Hearts ® Hypertension Control: Action Steps for Clinicians improves AHT medication adherence. To receive permission to gain access to operational data a disclosure form was completed stating the reason patient information is requested and how it will be utilized. For this doctoral project, I also signed the Health Insurance Portability and Accountability Act (HIPAA), to protect the privacy of the patient health information. I communicated that access to patient records were needed for the sole purpose of the quality improvement project.

## Evidence Generated for the Doctoral Project

### Participants

Ten participants with the medical diagnoses of HTN and that meet the inclusion and exclusion criteria were utilized for this doctoral project to reflect a sample of the HTN patient population that utilize the ambulatory clinic. Individuals who contributed evidence to address the practice focused question were included if they use either the onsite pharmacy or a community-based pharmacy to support data collection of participants in the project. The inclusion characteristics of the participant pool were: 1) English speaking adult patients in the ambulatory clinic; 2) with a diagnosis of HTN; 3) that gave consent; 4) and that utilize the onsite or community pharmacies contained on the list of accepted project pharmacies. To assure patients met criteria, potential participants were asked to verify whether they met each inclusion criteria and were excluded if they did not. To be included they were an English-speaking adult using the ambulatory clinic who could give consent to participate. Patient who stated their name, where they are, the date, and what they were giving consent for, were included. They had a diagnosis of HTN, and use a community or onsite pharmacy. Project activities that the participants engaged in include health literacy informational sessions to address the relevance of the practice focus question. Demographic data and medication pick up rates were collected by me to assess participant characteristics and project outcomes.

**Procedures**

After Walden University, Institutional Review Board approval and facility approval to conduct the program, fliers were posted to notify patients of the project. Potential participants were recruited via use of flyers and posters within the ambulatory clinic setting which gave an overview of the program along with inclusion and exclusion criteria, inviting those that met the criteria to participate in the doctoral project. I collected data to address the project outcomes via a convenience sample of 10 patients aged 21 to 76 with the diagnosis of HTN at the ambulatory clinic. Participants had essential HTN, gave consent, and use the onsite or community pharmacies (a list of which were provided to patients). Patients using the English language as their primary means of communication were included for this doctoral project. I collected the de-identified demographical patient data. Patients with HTN were also alerted to the program when seen in the ambulatory clinic by me. All interested patients had the opportunity to privately discuss the program with me in the ambulatory clinic. After thorough discussion of the program with the patient, including program objectives, inclusion/exclusion criteria, participant requirements, and data to be collected, patients meeting the inclusion/exclusion criteria and wished to participate were then asked to sign the consent. The consent process enabled patients to participate in the project and gave me permission to access their electronic health records to obtain information for the project. The consent was obtained prior to project implementation in the ambulatory

clinic setting. Consent was used to collect pre-and post-data. Only after participants gave consent to partake in the project was their de-identified demographical information obtained from eClinical Works me. The de-identified demographical data collected included gender, race, marital status, insurance status, and the community-based, or onsite pharmacy used by the patient to assess rate of new prescriptions or refill pickups of AHT medication 3 months retrospectively before project implementation. This information was tracked on an Excel Spreadsheet for data collection and for the post project implementation analysis.

**Step 1.** Flyers were placed at the ambulatory clinic to inform potential HTN candidates aged 21-76 of the project and the Health Literacy sessions offered. The flyers were placed to provide awareness on the project and information about the Health Literacy sessions related to AHT medication adherence occurred in the education room at the ambulatory clinic. Patients who met the program criteria were informed about the program when seen in clinic as well.

**Step 2.** All interested patients met individually at their convenience with me in a private clinic room to discuss the project. Those wishing to participate in the program and attend the educational session were asked to sign the consent form. Now, they were also given the Newest Vital Sign assessment to identify their health literacy status. This enabled the educational session to be delivered at the participant's health literacy level. The results from the Newest Vital Sign assessment were record on the Excel Spreadsheet.

Consent and Newest Vital Sign forms are being stored in the ambulatory clinic in a locked cabinet for five years then destroyed.

**Step 3**. Participants were given an opportunity to sign up for the Health Literacy Sessions. There were one-hour long sessions offered at a variety of dates and times over a two-week period and participants were asked to sign up to attend one session. Participants were delivered education on their health literacy level per the results of the health literacy assessment.

**Step 4.** I accessed patient medical records to collect the demographic data and de-identified it for use in this project. Data was entered in the Excel database stored on a password protected computer at the ambulatory clinic.

**Step 5.** I requested pharmacy records from participant's pharmacies using the request form supplied by the ambulatory clinic to obtain pharmacy data. I submitted request form to onsite pharmacist and or community pharmacist to obtain last 90-day AHT medication pickup occurrences on the10 patients.

**Step 6.** I entered data from the 10-doctoral project participant's pharmacy records on Excel Spreadsheet. Paper copy of pharmacy data that was de-identified and is being stored in locked cabinet and kept for 5 years then destroyed.

**Step 7.** I placed the information pertaining to health literacy sessions in a written manual form for the participants.

**Step 8.** Health literacy sessions occurred for each participate for one hour each at

the ambulatory clinic site at the assigned date/time. Participants received manuals on day of session. Participants were asked to attend one session.

**Step 9.** Three months after educational sessions I submitted request form to onsite pharmacist and or community pharmacist for last 90-day AHT medication pickup occurrences on the 10 patients.

**Step 10.** All pharmacy records gathered from the 10 doctoral project participants were entered by me into an Excel Spreadsheet which was used for post project analysis. All paper copies of data gathered for this project were de-identified and stored in a locked office cabinet during the project and for 5 years after the project and then will be destroyed.

**Step 11.** Post project data analysis occurred by me.

## Instruments

### Newest Vital Sign

Patients whom met the inclusion process for this doctoral project were given this assessment tool in paper form prior to the conducting any educational sessions. This tool was implemented by the me. No patient identifiable information was on the form. The NVS form is in Appendix N. All data collected from this form were recorded on an Excel Spreadsheet, which is located in Appendix B.

### Excel Spreadsheet

An Excel Spreadsheet was as a tool to measure AHT medication pick rates of new

prescriptions and refill occurrences of 10 HTN participants from the onsite and community-based pharmacies. This Excel Spreadsheet was developed and used as a tracking tool to identify gaps in AHT medication adherence and provide an ongoing data analysis for the duration of the doctoral project on the HTN patient population. The Excel Spreadsheet was designed to display evidence that had been gathered by me from the eClinical Works information system to display participants that have a medical diagnosis of HTN and for the onsite and community-based pharmacies that the patient utilizes for their AHT medications. The information entered in the Spreadsheet was de-identified demographical information which contained gender, race, marital status, insurance status, pharmacy, and AHT medications quantity, last refill data of AHT medication, last pick update of AHT medication, Days lapsed in pickup of AHT medication, and the date/time of the health literacy session that the patient attended. The information collected within the Excel Spreadsheet was used to support the practice focused question. Pharmacy data will be used to identify AHT medication adherence from onsite and community-based pharmacies. The Excel Spreadsheet was used for the data analysis to reveal if the health literacy sessions contributed to AHT medication adherence in the HTN patient population. Information within tracking tool was set by having an extensive inclusion and exclusion process in place to consider the data valid, as patients with missing information were not used for the doctoral project. All information within the Excel Spreadsheet obtained was related to supporting the validity of the

doctoral project in relationship to medication adherence. The Excel Spreadsheet was utilized to display the de-identified demographical information and the occurrence in which AHT medications prescriptions pickups are occurring by the HTN patient population. Per Hawkshead and Krousel-Wood (2007) the use of a pharmacy refill rate reflects the patient's decision to obtain the medication and can show gaps in refill of medication occurrences. The Excel Spreadsheet is in Appendix C.

**Protections**

Strategies for recruiting participates with the use of flyers posted in the ambulatory clinic that informs hypertensive patients about the project and how to participate. Candidates were required to have diagnoses of HTN. In developing a working relationship with participants, they were informed of the purpose of the doctoral project and how it may contribute to their personal self-care. Ethical protection occurred by following the rules and regulations that have been established at the ambulatory clinic, HIPAA for patient protection of data, using de-identified data, maintaining data privacy and security. Data was handled only project team members, data was only stored at the ambulatory clinic site on a computer password protected computer in which I had access to. The paper and electronic data for this project will only be stored for length of the doctoral project and then destroyed. Informed consent took place prior to data collection of any de-identified demographical information of potential participants for this project. Participants consented to be included in the doctoral project. Project consent took place at

the ambulatory clinic in which patients that desire to be included in the project signed the form. Consent from the patient population occurred prior to project implementation. Patients were informed of the intent of the project which allowed him or her to make an informed decision if they want to participant. Participants were informed that data retained will be for the DNP project only, including access to medical and pharmacy records. Patients had the right to withdraw from the project at any time. Incentives took place were two raffles for those that participate in the doctoral project at the ambulatory clinic the two prizes were no greater than 10 dollars that support medication adherence and health literacy. The raffles occurred on the day of the sessions prior to the session ending. The Walden University Institutional Review Board was used to assure that this doctoral project agreed with ethical standards. The University Research Review Board overseen that quality assurance was present within the doctoral project.

## Analysis and Synthesis

The systems used for recording, tracking, organizing, and analyzing the evidence was the use of the electronic medical record system called eClinical Works, Pharmacy data bases, and an Excel Spreadsheet. The eClinical Works systems was used to assure that patients that have signed up for the DNP project have a diagnosis of HTN, and this system was used to collect demographical information gender, race, insurance status, age, marital status, and pharmacy in which patient used for medication refills. The pharmacy data bases assisted in tracking of refill rates of AHT medications. The pharmacy data was

used to provide evidence of the occurrence of AHT medication pickups by patients participating in this doctoral project. All information was organized within an Excel Spreadsheet for recording, tracking and analyzing of evidence. Data collection occurred by me and project team members such as pharmacist. The procedure was used to assure the integrity of evidence along with approaches to manage outliers and missing information was obtained by inclusion and exclusion process. All participants had a current diagnosis of HTN and be patients of the ambulatory clinic. Patients with missing or outliers in the demographical information in eClinical Works that was used to assist with this DNP project were excluded from participating, this was to assist in maintaining integrity of the project. The analysis procedures used in the doctoral project was an impact evaluation. The impact evaluation allowed for an analysis of data calculations using descriptive analysis via percent to assess whether the Health Literacy tools from Million Hearts® Hypertension Control: Action Steps for Clinicians increases medication adherence for the HTN patient population. Additional patient demographical information collected was used to support answering the practice focused question. The demographic data collected within this doctoral project was evaluated by calculated using frequency, means, percentages and averages from the result findings of the targeted population of this HTN population. Comparisons from the pre-to post data collection occurred by me. The Excel Spreadsheet assisted to show frequency of AHT medication pickups by patients and lapses that occur in pick up. Pick up rates were calculated using percentages

differences and averaged from the evidence-based project findings.

## Summary

Section 3 provided a collection and analysis of evidence for this doctoral project. The practice focus question of whether Health Literacy tools from Million Hearts ® Hypertension Control: Action Steps for Clinicians increases medication adherence in the HTN patient population. Sources of evidence and operational data were utilized to explore the topic with evidence and tools for validity. In Section 4 of the project findings, implications, and recommendations are discussed to support quality improvements within the nursing practice while providing positive social change.

# Section 4: Findings and Recommendations

## Introduction

HTN has been a dominant health concern for over 10 years as it has been a leading cause of mortality globally (Oslen, 2015). With the extensive literature on HTN and its detrimental effects on the human population and healthcare systems, it is evident that there remains an ongoing challenge in addressing this issue. AHT medications are often prescribed to those with HTN, yet many still have not achieved adherence to their medication regimen in managing their condition. The local problem of nonadherence to AHT medication in the adult patient population is apparent in the ambulatory clinic

environment. HTN has been the most prevalent chronic condition in the ambulatory care environment, contributing to multiple office visits and additional prescription medications (Ashman & Beresovsky, 2013). There has been a gap in practice related to overestimation of patients' health literacy levels by nurses, which can lead to patients not understanding the importance of using AHT medication to manage their HTN. The practice-focused question concerned whether health literacy tools from Million Hearts ® Hypertension Control: Action Steps for Clinicians improves AHT medication adherence in adults with HTN. The purpose of the doctoral project was to implement quality improvement by using health literacy to accomplish AHT medication adherence in adults diagnosed with HTN. It is essential to use strategies that will facilitate improvement in the health status of those affected by HTN.

The sources of evidence used in this doctoral project were patients' eClinical electronic medical records to determine present diagnosis of HTN, pharmacy records, and NVS health literacy assessment of the patient participants. The evidence was obtained with patients' consent; I collected the needed data from records. The analytical strategy used was descriptive statistics, which allowed for an impact evaluation of the data to provide insight for addressing the practice problem.

## Findings and Implications

AHT medication nonadherence continues to be a problem for adult HTN patients. AHT medication nonadherence places patients at risk for strokes, unnecessary hospital

visits, additional cost of care burdens, and mortality. This doctoral project allowed for the issue of AHT medication nonadherence to be analyzed in an ambulatory practice environment, as well as for nursing interventions to be implemented to address this prevalent problem. Studies have already provided evidence that patients are vulnerable and at risk when they do not have an adequate understanding of information related to their health needs (*Patient Education Management,2011)*. HTN has been the most prevalent chronic condition in the ambulatory care environment that contributes to multiple office visits and additional prescription medications (Ashman & Beresovsky, 2013). The foundation of this doctoral project was the use of health literacy education to address AHT medication nonadherence in those diagnosed with HTN. This project was developed as a quality improvement initiative to support patient self-care efficacy and raise awareness for health literacy to take place in healthcare systems to reduce care fragmentation.

**Demographics**

A convenience sample was used that consisted of patient participants ($N = 5$) to represent the HTN registry of 341 patients at the ambulatory clinic located in Virginia. Initially, 10 individuals agreed to be included, but five were excluded due to not attending the individual health literacy session. The members of the identified participant population received primary care from the ambulatory clinic in managing their medical diagnoses of HTN. The participants included in this doctoral project used English as their

primary language to communicate. Demographic data indicated that the sample included one African American male, three African American females, and one Caucasian female. The ages of the individual participants ranged from 55-76 years (mean age = 66), *SD* = 9.1 (see Table 1). The various ages, races, genders, health insurance coverages, and marital statuses represented within this project reflected the diverse, yet growing population of patients diagnosed with HTN within communities at large. Noncommunicable diseases such as HTN are the main cause of mortality and disabilities globally (Saleem et al., 2015). The patient demographic data provides a summary of evidence which helps to support this doctoral project.

Table 1

*Hypertensive Patient Participant Demographics*

| Age | Race | Gender | Health insurance | Marital status | Use on-site pharmacy | Primary language |
|---|---|---|---|---|---|---|
| 55 | Caucasian | Female | Medicare | Divorced | No | English |
| 58 | African American | Female | Humana | Divorced | Yes | English |
| 68 | African American | Female | Medicare | Widowed | Yes | English |
| 73 | African American | Female | Medicare, Tricare | Widowed | No | English |
| 76 | African American | Male | Virginia Premier, Medicare, Medicaid | Single | Yes | English |
| | | | <u>Summary</u> | | | |
| *M*ean age = 66<br>Median age = 68<br>*SD* = 9.1 | Caucasian = 20%<br>African American = 80% | Female = 80%<br>Male = 20% | Health insurance = 100% | Divorced = 40%<br>Widowed = 40%<br>Single = 20% | 60% used an approved onsite pharmacy<br>40% used an approved offsite pharmacy | 100% used English as primary language |

*Note*. $N = 5$.

**Health Literacy Assessment**

There is a massive amount of information about HTN management available to adults living with the condition, including information concerning the importance of AHT medication adherence. However, evidence reveals that patients' health literacy levels have been misrepresented, resulting in knowledge deficits that affect patients' management of their health status.

The NVS is a health literacy assessment tool used to identify patients' understanding of health information. This doctoral project used the NVS health literacy assessment tool to determine participants' understanding of and ability to apply information to contribute to their well-being, to make informed decisions based on data, and to comprehend appropriate food serving sizes or amounts. Specifically, the NVS was used to assess individuals' ability to understand information presented in printed form on an ice cream nutritional label. This information correlates with how individuals understand the need to adhere to a prescribed AHT medication dosage and their current interpretation of self-care needs in managing chronic conditions such as HTN. When providers do not consider a patient's health literacy level, they may fail to recognize the patient's lack of understanding of prescribed medication and health status outcomes (Shah, West, Bremmeyr, & Savoy-Moore, 2010).

The NVS health literacy assessment included in this project contained six questions that the study participants ($N$ = 5) completed (see Tables 2 and 3). On the NVS

assessment, the highest possible score that a participant could obtain was 6. The results for individual answers that were correct ranged between 0 and 5; no individual answered all six questions correctly (see Table 2). Two individual participants (40%) had ≤ 0 to 1 correct answers; this result represents limited literacy in relation to health information. One participant (20%) was identified as having limited literacy, as indicated by ≤ 2 to 3 correct answers. An additional two participants (40%) had ≤ 4 to 5 assessment questions correct, which represented an adequate literacy level. This evidence provided here reflects that health literacy levels can vary from patient to patient, yet it remains pivotal that patients understand information regarding their health no matter what their literacy level status is. The results also reflected that none of the participants understood the amount of saturated fat that was being consumed within a daily diet when advised to reduce this amount. Additional concerns about patients' understanding of health information were raised because only two participants understood that if a person had a peanut allergy, the product would not be safe to consume, given that peanut oil was listed as an ingredient. Collective analysis of the results for the identified participant population (see Table 3) displays the number of correct responses from the NVS health literacy assessment, the percentage indicated a mean score of 1.8, which suggests limited literacy overall. Low health literacy is present in the clinical setting, and the need remains for this problem to be addressed (Heinrich, 2012). The results from the NVS health literacy assessment provide the opportunity for implementation of interventions to influence AHT

medication adherence and understanding of risk related to HTN. Permission to use the NVS health literacy assessment is located in Appendix N.


*Figure 1*. Ice cream label. From *The Newest Vital Sign*, by Pfizer, December 2016. Copyright 2016 by Pfizer Inc. In public domain. Reprinted with permission

Table 2

*Individual Participant Results for the Newest Vital Sign*

| Participant | Age | Gender | Q1 | Q2 | Q3 | Q4 | Q5 | Q6 |
|---|---|---|---|---|---|---|---|---|
| 1 | 55 | Female | Correct | Correct | No | No | Correct | Correct |
| 2 | 73 | Female | Correct | No | No | No | Correct | No |
| 3 | 58 | Female | Correct | Correct | No | Correct | Correct | Correct |
| 4 | 68 | Female | No | No | No | Correct | No | No |
| 5 | 76 | Male | No | No | No | No | No | No |

*Note*. Mean score = 1.8; *SD* = 0.9; 99% CI = [0.85-2.75].
Score 0-1 = limited literacy—40% of participants have limited literacy.
Score 2-3 = possibility limited literacy— 40% of participants have possibility limited literacy.
Score 4-6 = adequate literacy—20% of participants have adequate literacy.

Table 3

*Overall Results From the Newest Vital Sign*

| Questions | # Correct | Percentage |
|---|---|---|
| 1. If you eat the entire container, how many calories will you eat? | 3 | 50% |
| 2. If you are allowed to eat 60 grams of carbohydrates as a snack, how much ice cream could you have? | 2 | 30% |
| 3. Your doctor advises you to reduce the amount of saturated fat in your diet. You usually have 42g of saturated fat each day, which includes one serving of ice cream. If you stop eating ice cream, how many grams of saturated fat would you be consuming each day? | 0 | 0 |
| 4. If you usually eat 2,500 calories in a day, what percentage of your daily value of calories will you be eating if you eat one serving? | 2 | 30% |
| 5. READ TO SUBJECT: Pretend that you are allergic to the following substances: penicillin, peanuts, latex gloves, and bee stings. Pretend that you are allergic to the following substances: penicillin, peanuts, latex gloves, and bee stings. Is it safe for you to eat this ice cream? | 2 | 30% |
| 6. Ask only if the patient responds "no" to question 5): Why not? | 2 | 30% |

*Note*. Mean score = 1.8; *SD* = 0.9; 99% CI = [0.85-2.75]. Score of 0-1 suggests high likelihood (50% or more) of limited literacy. Score of 2-3 indicates the possibility of limited literacy. Score of 4-6 almost always indicates adequate literacy. Questions from *The Newest Vital Sign.*

**Pre-Post Data Collection**

Pharmacy records indicated that all five patient participants had been prescribed AHT medications to assist with HTN control. Review of current medications indicated that 40% of the participants' regimens included beta adrenergic blockers, 20% included

calcium channel blocks, 20% included angiotensin II receptor blockers, 20% included centrally acting alpha agonists, and 40% included combination AHT medication which had two or more drug properties (see pharmacy data in Appendix C).

AHT medications are commonly prescribed to manage and control HTN. It is important to identify patients' current adherence to AHT before dosage changes occur, given that such changes could create adverse reactions and raise the level of nonadherence to the recommended changes (Jankowska-Polańska, Uchmanowicz, Dudek, & Mazur, 2016).

During the 90-day retrospective period of June 15, 2017, to September 11, 2017, a 14-day lapse in angiotensin II receptor blocker medication pickup occurred for a 58-year-old African American female participant (see Table 4). This resulted in the patient not adhering to the prescribed AHT medications and increasing risk factors for negative health complications such as uncontrolled HTN and stroke. No lapses in refill pickup were found for the remaining four participants (see Appendix C).

Evidence continues to support the use of health literacy education to support HTN management and patient understanding. This doctoral project was used to answer the project question of whether implementation of Health Literacy from Million Hearts ® Hypertension Control: Action Steps for Clinicians enhances AHT medication adherence as evidenced by new prescriptions or refill pickups of AHT medication that patients obtain from a pharmacy during a 90-day calendar period. Each individual patient

participant attended an individual health literacy session at the ambulatory clinic. Ninety days after the health literacy session, post-project-implementation data were collected during the period from September 15, 2017, to December 13, 2017. There was evidence of a 24-day lapse in medication pickup occurrences for the same patient participant who was identified during the retrospective period for the angiotensin II receptor blocker (see Table 5).

Table 4

*Preproject Retrospective Pharmacy Data for 90-Day Period From June 14 to September11, 2017*[a]

| Participant age | Gender | Race | Angiotensin II receptor blocker | Quantity | Last refill date | Last pickup date | Days lapsed in refill occurrence pickup |
|---|---|---|---|---|---|---|---|
| 58 | Female | African American | Losartan potassium 100mg daily | 30 days | 7/27/2017 | 7/27/2017 | 14 |

*Note*. Twenty percent of participants were prescribed angiotensin II receptor blockers.
[a]Includes start date and end date of the calendar period.

Table 5

*Post-Project-Implementation Data for 90-Day Period From September 15 to December 13, 2017*[a]

| Participant age | Gender | Race | Angiotensin II receptor blocker | Quantity | Last refill date | Last pickup date | Days lapsed in refill occurrence pickup |
|---|---|---|---|---|---|---|---|
| 58 | Female | African American | Losartan potassium 100mg daily | 30 days | 9/7/2017<br>11/7/2017 | 9/7/2017<br>11/7/2017 | 24 |

*Note*. Twenty percent of participants were prescribed angiotensin II receptor blockers.

[a]Includes start date and end date of the calendar period.

Table 6

*Preproject Retrospective Pharmacy Data for 90-Day Period From June 14 to September 11, 2017*[a]

| Participant age | Gender | Race | Combination AHT medication | Quantity | Last refill date | Last pickup date | Days lapsed in refill occurrence pickup |
|---|---|---|---|---|---|---|---|
| 55 | Female | Caucasian | Lisinopril-Hctz 10-12.5mg daily | 90 days | 9/7/2017 | 9/8/2017 | 0 |
| 73 | Female | African American | Tribenz or 40-10-25mg daily | 90 days | 9/21/2017 | 9/27/2017 | 0 |

*Note*. Forty percent of participants are prescribed combination medication.
[a]Includes start date and end date of the calendar period.

**Analysis of Data to Answer Project Question**

The data presented in this doctoral project were gathered to answer the question of whether implementation of Health Literacy from Million Hearts ® Hypertension Control: Action Steps for Clinicians enhanced AHT medication adherence as evidenced by new prescriptions or refill pickups of AHT medication that patients obtained from the pharmacy during a 90-day calendar period. Each individual in this study participated in a health literacy session. The health literacy sessions were individual and lasted 1 hour. During the session's *High Blood Pressure Basics* video (available at https://www.youtube.com/watch?v=mjTMZ_sm0LQ), *Treating High Blood Pressure* video (available at https://www.youtube.com/watch?v=XbLmIoyDJuE), and *Gail's*

*Million Hearts® Story* video (available at https://www.youtube.com/watch?v =ZOoRLFdOdac), *High Blood Pressure Medications and You Infographic* (available at https://www.fda.gov/downloads/Drugs/ResourcesForYou/SpecialFeatures/UCM358489.pdf) , the following materials were given to each participant and discussed: *Medication Wallet Cards* (Appendix D), *Hypertension Control Action Steps* (Appendix E), *Myth or Fact: Truth About Cardiovascular Medications* (Appendix F ), *Know the Facts About High Blood Pressure* (Appendix G) *ABCs of Heart Health* (Appendix H), *Costs & Consequences* (Appendix I), *Risks for Heart Disease & Stroke* (Appendix J), *Sodium—Tracking Down the Salt in Food* (Appendix K), *A Snapshot: Blood Pressure in the U.S.* (Appendix L), and *High Blood Pressure: How to Make Control Your Goal* (Appendix M).

The use of health literacy education was not found to influence the medication adherence rate of adults diagnosed with HTN. Prior to project implementation, 20% of the participant population had been identified as nonadherent in relation to picking up AHT medication, resulting in a 14-day medication gap (see Table 4). This project focused on using 1-hour individual health literacy sessions with participants to improve the AHT medication adherence rate. However, the rate remained unchanged, as evident in 20% of the participant population remaining nonadherent in picking up AHT medication, with a 24-day lapse in medication pickup occurrence (see Table 5). Comparing the data found in Tables 4 and 5, there was a total of 38 days in which lapsed

refill occurrence pickups took place.

Additionally, a common trend among the participants was that they really did not understand how AHT medications help to support wellness and reduce risk of stroke. The educational sessions appeared to be helpful, in that participants had the opportunity to learn about the specific AHT medications they had been prescribed and ways to support medication adherence. In relation to the handout *High Blood Pressure: How to Make Control Your Goal* (Appendix N), a common trend among participants was a knowledge deficit, in that they did not know what their most recent blood pressure was or how their specific medication worked to control their blood pressure. All of the participants (*N* = 5) were receptive to the information on *Sodium— Tracking Down the Salt in Food* in relationship to support self-care and blood pressure control, as a visual aid was used that allowed individuals to see what was considered an appropriate amount of sodium to consume.

In the *Gail's Million Hearts® Story* video, which was less than 3 minutes long, the speaker shared her challenges related to HTN and heart disease risk and described how making small changes could reduce negative health implications. This video allowed participants to relate to someone who had the same diagnosis of HTN. Participants were very engaged in listening to Gail describe the she had made to improve her health status. The participants were able to identify with someone who had faced many of the same health challenges that they did.

Of the participants ($N$ = 5), there was one individual who remained nonadherent to AHT, as reflected in lapses in medication pickup occurrences (see Tables 4 and 5). As the project did not appear to influence AHT medication adherence in all those who participated, AHT continued to be prevalent among the majority ($N$ = 4) of participants, who had no lapses in medication pickup days.

**Discussion of Findings**

An unanticipated limitation was the limited sample size of five participants. Therefore, generalizability was not conclusive based on the sample size used to represent the HTN population of the ambulatory clinic. The participants ($N$ = 5) attended a 1-hour health literacy session individually, which provided the opportunity for nursing interventions to be implemented in an attempt to influence AHT medication adherence. The findings from the session indicated that many did not understand the importance of AHT medications, especially those that use combination medication to control blood pressure, as 40% of individuals were unware that they were using combination medications to manage their condition (Table 6). Often, to gain better control in managing HTN, patients are prescribed combination AHT medication. The individual session provided patient–nurse engagement to influence learning and medication adherence.

**Implications of Results**

The findings imply that HTN can affect individuals of various races and genders

who use ambulatory clinics. The sample of five adult patient participants was limited in size, yet had the ability to represent individuals in various communities across the nation who access ambulatory clinics but whose specific health literacy needs are not being met. Not only patients with diagnoses of HTN, but also other populations such as patients with diabetes could benefit from the use of health literacy interventions. Each encounter with the patient population should be an opportunity to assess and address members' specific ongoing health literacy needs to aid in self-care management. These individuals continue to be part of the community in which they reside and access care services. Healthcare institutions have a responsibility to decrease care fragmentation and improve systems that contribute quality care services for the HTN patient population. Areas such as limited health literacy must be addressed to achieve quality improvements and patient outcomes. The results reflected in this doctoral project prove that opportunities remain for quality improvements to occur in ambulatory clinics, in that 40% of participants were identified as having limited health literacy (see Table 3). In regard to future health literacy projects, it is noteworthy that this project showed that a 58-year-old African American female patient had an adequate health literacy level (see Table 2) yet continued to be nonadherent to AHT medications (see Tables 4 and 5). This finding indicates a need for future health literacy projects that target and take into consideration income level, health insurance cost, medication cost, and transportation needs as contributors to medication nonadherence in those with HTN.

## Social Change

This doctoral project provides awareness of limited health literacy in members of the HTN patient population who access ambulatory clinics and its relationship to nonadherence to AHT medications. This project allowed for nurse-led patient education to occur and for nursing and the pharmacy department to work together as vested stakeholders in promoting and creating positive social change. Addressing problems within nursing practice can translate into system-wide transformations in healthcare entities to improve quality outcomes and empower patients with knowledge to contribute to their specific care needs.

## Recommendations

Based on the findings within this doctoral project, I recommend the implementation and use of evidence-based health literacy assessment with the patient population to identify current health literacy levels. By identifying a patient's current health literacy level, it is possible to tailor educational interventions to that specific individual. This project contributes to addressing the gap related to the practice problem in regard to health literacy.

The findings discussed above reflect the need for practice standards to be implemented so that all patients who access care in the ambulatory clinic have a health literacy assessment. As the results of the health literacy assessment then could be used to improve nurse to patient interventions and decrease the risk of care fragmentation. Within

this doctoral project interventions were done on an individual basis with a small scale patient population. As patient's healthcare needs and status change interventions will need to remain current and progressive to support health literacy needs and challenges. Included in this doctoral project are the products in the appendixes which are the NVS health literacy assessment and the Million Hearts ® Hypertension Control: Action Steps for Clinicians. The information can be presented to patients individual or within a group setting. This doctoral project time frame allowed for patient participant to attend one individual session.

## Contribution of the Doctoral Project Team

The process of working with the doctoral project team has been continual to support timeliness and successful completion. The project team utilized email, phone calls, and face to face encounters to support and guide the project goal. The doctoral project team consist of a nurse practitioner, case manager, and pharmacists. Each team member had important responsibilities which contributed to this project. The nurse practitioner's clinical expertise was utilized as a consultant for this doctoral project by me. The case manager promoted the doctoral project within the ambulatory clinic setting using flyers, assisting with obtaining community-based pharmacy data related to patient's adherence to AHT medications whom didn't use the onsite pharmacy. The pharmacists assisted in gathering data of patients AHT medication pickup and refill occurrences. The project team played a valuable role in guiding this project by their first-hand knowledge

of AHT medication nonadherence within the ambulatory clinic setting. The team's insight influenced a product to address medication nonadherence in the form of a patient health literacy manual and access to short videos to support those diagnosed with HTN. Individual patients could receive one on one consulting with an advance practice nurse about strategies that would support controlling their HTN status, in which the sessions would be an hour in length. Team members also recommended the use of posters to assist with meeting the health literacy educational needs. As there are plans to extend this project into a wider audience such as community centers, health care fairs, physician offices and nursing organizations which could benefit from this project to increase awareness of the need of health literacy for HTN population to facilitate and promote patient wellness.

## Strengths and Limitations of the Project

The strengths within this doctoral project were it utilized a health literacy assessment to address the needs of adult participants with HTN. The health literacy assessment provided evidence which led to implementing an individual 1-hour health literacy session. The session allowed for participants to gain knowledge about AHT medication adherence to support self-care management. A limitation was size of the population which included 5 adults.

Recommendations for future project would address additional reasons for medication nonadherence such as cost of medication. Also finding a larger population

that all subjects had medication pick up delay occurrences, could have contribute to having a control group and an experimental group going forward. By nurses utilizing projects to address issues in practice can reduce care fragmentation.

## Section 5: Dissemination Plan

### Introduction

The issue of medication adherence and health literacy in patients diagnosed with hypertension continues to be of profound concern. The findings and work from this doctoral project will be disseminated to provide awareness of issues within the practice environment. My plan is to disseminate this work to the institution experiencing the practice problem by sharing the results with the site administration, clinical staff, and pharmacy department in the form of a scholarly article.

Based on the nature of this product, the audiences and venues that would be appropriate for project dissemination consist of nurses who care for patients with diagnoses of HTN and individuals at risk of the development of this chronic disease process. This project would be appropriate for introduction in inpatient and outpatient clinical settings that have direct contact with adult patients.

### Analysis of Self

In this section, I provide an analysis of myself in the roles of practitioner, scholar, and project manager. As a practitioner, I sought to address a practice area within nursing

that has often been overlooked in relationship to health literacy and the influence that it has on patient understanding, wellness, and achievement of medication adherence to reduce risk and complications. In the role of practitioner, I found that this project increased my awareness of the need to ensure patients within various community settings understand health literacy to influence not only medication adherence, but also self-care in relation to their medical diagnoses. As a scholar, I found that this project gave me skills and tools to translate evidence in nursing into practice to support the health outcomes of the patient population and health care systems in the community. In the role of project manager, I gained a greater appreciation of the need to have ongoing communication on project goals with team members, maintain a timeline that is achievable, and ensure that the product aligns with the purpose of the project.

This project experience provided a connection between the challenges that patients with HTN are facing in achieving adherence to AHT regimens and the need to address and assess patients' health literacy levels to support the achievement of optimal health. In reflecting on long-term professional goals, my role in health care must continue to contribute to strengthening communities and the individuals in them, provide knowledge, and support healthcare professionals and health care systems.

The completion of this project took place over time, as each task that was accomplished supported the goal of project closure. The challenge was completing the project within 90 days and finding adults who desired to participate within a quality

improvement project. The solutions were communicating weekly and delegate tasks to team members to assist in keeping the project at the 90-day timeline. To gain patient interest, flyers were placed within areas that patients had access to, such as the lobby of the ambulatory clinic, to promote potential candidate participation. I offered the incentive of two raffles in which two project participants would receive $10 each. On this scholarly journey, I learned that it is vital not only to make contributions that support the patient population, but also contribute to the organization and stakeholders in the community to support all aspects of the project from beginning to end.

## Summary

Quality improvements are vital in the management of HTN patient populations to support their health literacy needs. This doctoral project provides evidence that can be translated into practice to guide and support changes to reduce care gaps in nursing practice that affect quality outcomes. Nurses can enhance practice by using their skills, knowledge, and voices to make effective changes by identifying issues within the current practice environment and implementing interventions that include evidence-based practice approaches to support the needs of patients, health care systems, and community stakeholders.

The aim of this project to improve AHT medication adherence in adults aged 21-76 was not achieved, in that nonadherence to AHT medication continued even after educational measures were implemented. This project did achieve a means of identifying

those within the clinical setting who have health literacy challenges.

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# Appendix A: Hypertensive Patient Participant Demographics

| Age | Race | Gender | Health insurance | Marital status | Use onsite pharmacy | 1-hour health literacy session | Attended |
|---|---|---|---|---|---|---|---|
| 55 | Caucasian | Female | Medicare | Divorced | No | September 12th 2017 4pm | Yes |
| 58 | African American | Female | Humana | Divorced | Yes | September 12th 2017 11am | Yes |
| 68 | African American | Female | Medicare | Widowed | Yes | September 14th 2017 10am | Yes |
| 73 | African American | Female | Medicare, Tricare | Widowed | No | September 13th 2017 2pm | Yes |
| 76 | African American | Male | Virginia Premier Medicare, Medicaid | Single | Yes | September 13th 2017 10am | Yes |

# Appendix B: Results from the Newest Vital Sign

*Overall Results From the Newest Vital Sign*

| Questions | # Correct | Percentage |
|---|---|---|
| 1. If you eat the entire container, how many calories will you eat? | 3 | 50% |
| 2. If you are allowed to eat 60 grams of carbohydrates as a snack, how much ice cream could you have? | 2 | 30% |
| 3. Your doctor advises you to reduce the amount of saturated fat in your diet. You usually have 42g of saturated fat each day, which includes one serving of ice cream. If you stop eating ice cream, how many grams of saturated fat would you be consuming each day? | 0 | 0 |
| 4. If you usually eat 2,500 calories in a day, what percentage of your daily value of calories will you be eating if you eat one serving? | 2 | 30% |
| 5. READ TO SUBJECT: Pretend that you are allergic to the following substances: penicillin, peanuts, latex gloves, and bee stings. Pretend that you are allergic to the following substances: penicillin, peanuts, latex gloves, and bee stings. Is it safe for you to eat this ice cream? | 2 | 30% |
| 6. Ask only if the patient responds "no" to question 5): Why not? | 2 | 30% |

*Note*. Mean score = 1.8; *SD* = 0.9; 99% CI = [0.85-2.75]. Score of 0-1 suggests high likelihood (50% or more) of limited literacy. Score of 2-3 indicates the possibility of limited literacy. Score of 4-6 almost always indicates adequate literacy. Questions from *The Newest Vital Sign.*

# Appendix C: Pharmacy Data Pre and Post

*PreProject Retrospective Pharmacy Data for 90-Day Period From June 14 to September 11, 2017*[a]

| Participant Age | Gender | Race | Beta-Adrenergic Blocker | Quantity | Last Refill Date | Last Pickup Date | Days Lapsed in refill occurrence pickup |
|---|---|---|---|---|---|---|---|
| 73 | Female | African-American | M etoprolol Succinate ER 200mg daily | **90 days** | 8/21/2017 | 7/25/2017 | 0 |
| | | | | | | | |
| 76 | Male | African-American | 76 Metoprolol Tartrate 50mg twice a day | 60 days | 8/31/2017 | 9/6/2017 | 0 |

*Note.* Forty percent of participants were prescribed a Beta- Adrenergic Blocker
[a] Includes start and the end date of the calendar period.

*PreProject Retrospective Pharmacy Data for 90-Day Period From June 14 to September 11, 2017*[a]

| Participant Age | Gender | Race | Calcium Channel Blocker | Quantity | Last Refill Date | Last Pickup Date | Days Lapsed in refill occurrence pickup |
|---|---|---|---|---|---|---|---|
| 68 | Female | African-American | Norvasc 10mg daily | **60 days** | 9/5/2017 | 9/5/2017 | 0 |

*Note.* Twenty percent of participants were prescribed a Calcium Channel Blocker
[a] Includes start and the end date of the calendar period.

*PreProject Retrospective Pharmacy Data for 90-Day Period From June 14 to September 11, 2017*[a]

| Participant Age | Gender | Race | Angiotensin II Receptor Blocker | Quantity | Last Refill Date | Last Pickup Date | Days Lapsed in refill occurrence pickup |
|---|---|---|---|---|---|---|---|
| 58 | Female | African-American | Losartan Potassium 100mg daily | **30 days** | 7/27/2017 | 7/27/2017 | 14 |

*Note.* Twenty percent of participants were prescribed a Angiotensin II Receptor Blocker
[a] Includes start date and the end date of the calendar period.

*PreProject Retrospective Pharmacy Data for 90-Day Period From June 14 to September 11, 2017*[a]

| Participant Age | Gender | Race | Centrally acting Alpha Agonists | Quantity | Last Refill Date | Last Pickup Date | Days Lapsed in refill occurrence pickup |
|---|---|---|---|---|---|---|---|
| 73 | Female | African-American | Catapres 0.3mg transdermal patch weekly | 84 days | 7/17/2017 | 7/22/2017 | 0 |

*Note.* Twenty percent of participants were prescribed a Centrally acting alpha agonists
[a] Includes start date and the end date of thecalendar period. *3boxes= 84-day supply for quantity

*PreProject Retrospective Pharmacy Data for 90-Day Period From June 14 to September 11, 2017*[a]

| Participant Age | Gender | Race | Combination AHT medication | Quantity | Last Refill Date | Last Pickup Date | Days Lapsed in refill occurrence pickup |
|---|---|---|---|---|---|---|---|
| 55 | Female | Caucasian | Lisinopril-Hctz 10-12.5mg daily | 90 days | 9/7/2017 | 9/8/2017 | 0 |
| 73 | Female | African-American | Tribenzor 40-10-25 mg daily | 90 days | 9/21/2017 | 9/27/2017 | 0 |

*Note.* Forty percent of participants were prescribed a Combination AHT medication
[a] Includes start date and the end date of the calendar period.

*Post- Project-Implementation Pharmacy for 90-Day Period From September 15 to December 13, 2017*[a]

| Participant Age | Gender | Race | Beta-Adrenergic Blocker | Q uantity | Last Refill Date | Last Pickup Date | Days Lapsed in refill occurrence pickup |
|---|---|---|---|---|---|---|---|
| 73 | Female | African-American | Metoprolol Succinate ER 200mg daily | **90 days** | 11/14/2017 | 11/18/2017 | 0 |
| 76 | Male | African-American | Metoprolol Tartrate 50mg twice a day 60days | 60 days | 10/09/2017<br>11/10/2017 | 10/09/2017<br>11/10/2017 | 0 |

*Note.* Forty percent of participants were prescribed a Beta-Adrenergic Blocker
[a] Includes start date and the end date of the calendar period.

*Post- Project-Implementation Pharmacy for 90-Day Period From September 15 to December 13, 2017*[a]

| Participant Age | Gender | Race | Calcium Channel Blocker | Q uantity | Last Refill Date | Last Pickup Date | Days Lapsed in refill occurrence pickup |
|---|---|---|---|---|---|---|---|
| **68** | Female | African-American | Norvasc 10mg daily | **30 days** | 10/20/1017<br>11/20/2017 | 10/20/2017<br>11/07/2017 | 0 |

*Note.* Twenty percent of participants were prescribed a Calcium Channel Blocker
[a] Includes start date and the end date of the calendar period.

*Post- Project-Implementation Pharmacy for 90-Day Period From September 15 to December 13, 2017*[a]

| Participant Age | Gender | Race | Angiotensin II Receptor Blocker | Quantity | Last Refill Date | Last Pickup Date | Days Lapsed in refill occurrence pickup |
|---|---|---|---|---|---|---|---|
| **58** | Female | African-American | Losartan Potassium 100mg daily | **30 days** | 09/07/2017<br>11/07/2017 | 09/07/2017<br>11/07/2017 | 24 |

*Note.* Twenty percent of participants were prescribed a Calcium Channel Blocker
[a] Includes start date and the end date of the calendar period.

*Post- Project-Implementation Pharmacy for 90-Day Period from September 15 to December 13, 2017*[a]

| Participant Age | Gender | Race | Centrally acting Alpha Agonists | Quantity | Last Refill Date | Last Pickup Date | Days Lapsed in refill occurrence pickup |
|---|---|---|---|---|---|---|---|
| 73 | Female | African-American | Catapres 0.3mg transdermal patch weekly | 84 days | 10/17/2017 | 10/21/2017 | 0 |

*Note.* Twenty percent of participants were prescribed a Centrally acting Alpha Agonists
[a] Includes start date and the end date of the calendar period. *3boxes= 84 day supply for quantity

*Post- Project-Implementation Pharmacy for 90-Day Period from September 15 to December 13, 2017*[a]

| Participant Age | Gender | Race | Combination AHT medication | Quantity | Last Refill Date | Last Pickup Date | Days Lapsed in refill occurrence pickup |
|---|---|---|---|---|---|---|---|
| 55 | Female | Caucasian | Lisinopril-Hctz 10-12.5mg daily | 90 days | 12/6/2017 | 12/7/2017 | 0 |
| 73 | Female | African-American | Tribenzor 40-10-25 mg daily | 90 days | 9/18/2017 | 9/22/2017 | 0 |

*Note.* Forty percent of participants were prescribed a Combination AHT medication
[a] Includes start date and the end date of the calendar period.

Appendix D: Medication Wallet Cards


From *My Blood Pressure Wallet Card, 2013. (https://millionhearts.hhs.gov/files/BP_Wallet_Card.pdf).* In the Public domain. Reformatted for inclusion in the current project document.

Appendix E: Hypertension Control Action Steps for Clinicians

# Hypertension Control


## ACTION STEPS For Clinicians

A MILLION HEARTS ® ACTION GUIDE

## Acknowledgments

We would like to extend special thanks to the following individuals for their assistance in the development and review of this document:

### Centers for Disease Control and Prevention

Barbara Bowman, PhD
Peter Briss, MD, MPH
David Callahan, MD, FAAFP
Mary George, MD, MSPH, FACS, FAHA
Allison Goldstein, MPH
Judy Hannan, MPH, RN
Kathy Harben, BA
Yuling Hong, MD, MSc, PhD, FAHA
Fleetwood Loustalot, PhD, FNP
Rikita Merai, MPH*
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## Suggested Citation

Centers for Disease Control and Prevention. *Hypertension Control: Action Steps for Clinicians.* Atlanta, GA: Centers for Disease Control and Prevention, US Dept of Health and Human Services; 2013.

To reduce the burden of heart attack and stroke in the United States, the Department of Health and Human Services launched Million Hearts®. The goal of this initiative is to prevent one million heart attacks and strokes by 2017 by implementing proven and effective interventions in clinical settings and communities. Million Hearts® brings together communities, health systems, nonprofit organizations, federal agencies, and private-sector partners from across the country to fight heart disease and stroke.

High blood pressure is one of the leading causes of heart disease and stroke.[1] One in every three U.S. adults (67 million) has high blood pressure, and only about half of these individuals have their condition under control.[2] Of the 36 million Americans who have uncontrolled hypertension, most have a usual source of care (89.4%), received medical care in the previous year (87.7%), and have health insurance (85.2%).[3]

The purpose of this document is to deliver tested strategies for busy clinicians to aid in efforts related to hypertension control. These strategies were gathered from the published scientific literature (evidence-based) or found to be effective in clinical settings (practice-based). The strategies are organized into three categories of actions to improve delivery system design (Table 1), improve medication adherence (Table 2), and optimize patient reminders and supports (Table 3). This document contains additional resources and references where more information can be found for each action step.

# Strategies for Hypertension Control

| Table 1. Actions to Improve Delivery System Design |
|---|
| Implement a standardized hypertension treatment protocol.[4]<br>u Support titration of hypertension medications by clinical team members via a physician-approved protocol.[5,6] |
| Designate hypertension champions within your practice or organization.[7] |
| Proactively track and contact patients whose blood pressure is uncontrolled using an electronic health record (EHR)-generated list, patient registry, or other data source.[7–9] |
| Create a blood pressure measurement station where all patients can rest quietly for 5 minutes before measurement and that is designed to support proper measurement techniques (e.g., feet on floor, proper arm position, multiple cuff sizes conveniently located).[9] |
| Have care team members review a patient's record before the office visit to identify ways to improve blood pressure control.[7] |
| Proactively provide ongoing support for patients with hypertension through office visits or other means of contact until blood pressure is controlled.[10] |
| Implement systems to alert physicians about patterns of high blood pressure readings taken by support staff.[11,12]<br>u Place a sign or magnet on the outside of the examination room.<br>u Build clinical decision supports into the EHR. |
| Provide feedback to individual clinicians and clinic sites on their hypertension control rates. Provide incentives for high performance, and recognize high performers.[4] |
| Provide blood pressure checks without a copayment or appointment. Train clerical personnel in proper blood pressure measurement technique so they are capable of obtaining drop-in blood pressure readings.[4,13] |
| Encourage clinicians to take continuing education on hypertension management and care of resistant hypertension.[4,14] |

| Table 2. Actions to Improve Medication Adherence |
| --- |
| Encourage patients to use medication reminders.[15–18]<br>▫ Promote pill boxes, alarms, vibrating watches, and smartphone applications. |
| Provide all prescription instructions clearly in writing and verbally.[19]<br>▫ Limit instruction to 3–4 major points.<br>▫ Use plain, culturally sensitive language.<br>▫ Use written information or pamphlets and verbal education at all encounters. |
| Ensure patients understand their risks if they do not take medications as directed. Ask patients about these risks, and have patients restate the positive benefits of taking their medications.[19] |
| Discuss with patients potential side effects of any medications when initially prescribed and at every office visit thereafter.[20] |
| Provide rewards for medication adherence.[21]<br>▫ Praise adherence.<br>▫ Arrange incentives, such as coupons, certificates, and reduced frequency of office visits. |
| Prescribe medications included in the patient's insurance coverage formulary, when possible.[22] |
| Prescribe once-daily regimens or fixed-dose combination pills.[23–26] |
| Assign one staff person the responsibility of managing medication refill requests.[27]<br>▫ Create a refill protocol. |
| Implement frequent follow-ups (e.g., e-mail, phone calls, text messages) to ensure patients adhere to their medication regimen.[15,28–30]<br>▫ Set up an automated telephone system for patient monitoring and counseling. |

| Table 3. Actions to Optimize Patient Reminders and Supports |
| --- |
| Provide patients who have hypertension with a written self-management plan at the end of each office visit.[12,31]<br>▫ Encourage or provide patient support groups.<br>▫ Use all staff interactions with patients as opportunities to assist in self-management goal-setting and practices.<br>▫ Print visit summaries and follow-up guidance for patients. |
| Generate lists of patients with hypertension who have missed recent appointments. Send phone, mail, e-mail, or text reminders.[13] |
| Contact patients to confirm upcoming appointments, and instruct them to bring medications, a medication list, and home blood pressure readings with them to the visit.[7] |
| Send a postcard to or call patients who have not had their blood pressure checked recently. Invite them to drop in to have their blood pressure checked by a medical assistant, nurse, or other trained personnel without an appointment and at no charge.[12] |
| Send patients text messages about taking medications, home blood pressure monitoring, or scheduled office visits.[30] |
| Encourage patients to use smartphone or Web-based applications to track and share home blood pressure measurements.[32,33] |
| Encourage home blood pressure monitoring plus clinical support using automated devices with a properly sized arm cuff.[7,34,35]<br>▫ Advise patients on choosing the best device and cuff size.<br>▫ Check patients' home monitoring devices for accuracy.<br>▫ Train patients on proper use of home blood pressure monitors. |
| Implement clinical support systems that incorporate regular transmission of patients' home blood pressure readings and customized clinician feedback into patient care.[35]<br>▫ Train staff to administer specific clinical support interventions (e.g., telemonitoring, patient portals, counseling, Web sites).<br>▫ Incorporate regular transmission of patient home blood pressure readings through patient portals, telemonitoring, log books, etc., to clinicians and EHR systems.<br>▫ Provide regular customized support and advice (e.g., medication titration, lifestyle modifications) based on patient blood pressure readings. |

Resources

### Resources for Delivery System Design

American Academy of Family Physicians. Using a Simple Patient Registry to Improve Your Chronic Disease Care.

American Medical Group Foundation. Provider Toolkit to Improve Hypertension Control.

Centers for Disease Control and Prevention. Protocol for Controlling Hypertension in Adults.

Washington State Department of Health. Improving the Screening, Prevention, and Management of Hypertension— An ImplementationToolforClinicalPracticeTeams.

### Resources for Medication Adherence

American Academy of Family Physicians. Improving Patient Care: Rethinking Refills.

American College of Preventive Medicine. Medication Adherence Time Tool: Improving HealthOutcomes.

Centers for Disease Control and Prevention. Medication Adherence Educational Module.

Script Your Future. Adherence Tools.

Surescripts. Clinician's Guide to e-Prescribing: 2011 Update.

### Resources for Patient Reminders and Supports

Agency for Healthcare Research and Quality. Electronic Preventive Services Selector (ePSS).

American Heart Association. Heart360. An Online Tool for Patients to Track and Manage Their Heart Health and Share Information with Healthcare Providers.

Institute for Healthcare Improvement. Partnering in Self-Management Support: A Toolkit for Clinicians.

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8. Burke W, Nelson K, Caulin-Glaser T, Snow R. Use of hypertension registry to identify patients at high risk for cardiovascular events caused by metabolic syndrome. Ost Fam Phys. 2010;2(10):124–30.

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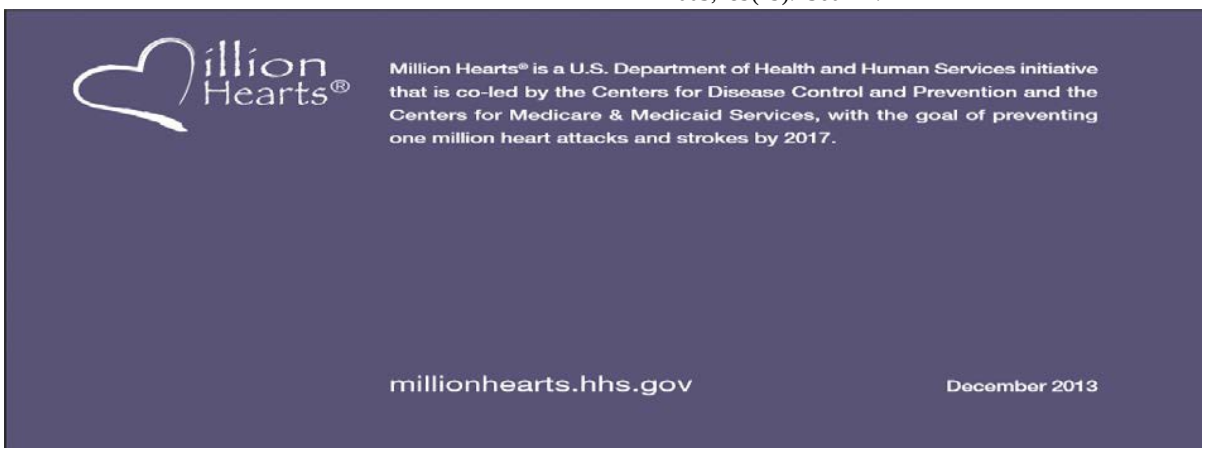


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Appendix F: Myth or Fact: Truth about Cardiovascular Medication

# MYTH or FACT:
# The Truth about Cardiovascular Medications

When you have high blood pressure or high cholesterol, your medication can help give you the freedom to keep doing what you love. Check out these common myths about cardiovascular medications. Are any of these holding you back?

**MYTH #1: I've heard that the side effects of medications for high blood pressure and high are not worth it.**

**FACT:** Any medication can cause side effects, but many people do not experience negative effects from taking medication for high blood pressure or high cholesterol. For those that do, the side effects are often mild. But if you're worried or are experiencing side effects, talk to your healthcare providers. They can help you choose a medication that works for you, so you can keep going strong for the ones you love.

MYTH#2: **I feel fine, so I can stop taking my medication.**

**FACT:** For your medication to work properly, you should always take it as prescribed. Should always take it Never stop taking medication without first talking to your healthcare provider and always remember to follow the recommendations of your healthcare team.

MYTH #3: **I'm taking my medication, so I can eat whatever I want**.

**FACT:** Taking medication does not eliminate the need for a healthy lifestyle.

While medication can help control your high blood pressure or high cholesterol, it's important to eat healthy and enjoy regular physical activity as well. Consider grilling or baking instead of frying, eat fresh fruits and vegetables, and check nutrition labels to find foods with 140 mg or less of sodium. Above all, always remember to follow your healthcare provider's advice.

**MYTH #4: I eat healthy and exercise, so I don't need to or can eventually stop taking my medication.**

**FACT:** High blood pressure or high prescribed. cholesterol can be lifelong issues. Healthy eating and exercise can make a difference, but these changes may not always be enough to control high blood pressure or high cholesterol.

If you need medication, taking it as prescribed can reduce your chance of having a heart attack or stroke. Remember to talk to your healthcare provider about your personal health provider about your personal health history and what's right for you.

**MYTH #5:** I've never had a heart attack or stroke, so I don't need to make lifestyle changes. **FACT:** Just because you've never had a heart attack or stroke doesn't mean that you won't. Don't wait for symptoms. Talk to your healthcare provider and getting your blood pressure and cholesterol checked regularly.

STRONG MEN PROTECT THEIR FUTURE AND THE ONES THEY LOVE.

Talk to your healthcare provider about these common myths or visit **millionhearts.hhs.gov** for more information. It's up to you to decide whether high blood pressure and high cholesterol. From *Myth or Fact: The Truth About Cardiovascular Medications*, by Centers for Disease Control and Prevention, n.d. (https://millionhearts.hhs.gov/files/HIS_Truth _about_medications.pdf). In the public domain. Reformatted for inclusion in the current project document.

# Appendix G: Know the Facts about High Blood Pressure

## KNOW THE FACTS ABOUT

## High Blood Pressure

### What is high blood pressure?

Blood pressure is the force of blood against your artery walls as it circulates through your body. Blood pressure normally rises and falls throughout the day, but it can cause health problems if it stays high for a long time. High blood pressure can lead to heart disease and stroke—leading causes of death in the United States.[1]

### Are you at risk?

One in three American adults has high blood pressure—that's an estimated 67 million people.[2] Anyone, including children, can develop it.

Several factors that are beyond your control can increase your risk for high blood pressure. These include your age, sex, and race or ethnicity. But you can work to reduce your risk by eating a healthy diet, maintaining a healthy weight, not smoking, and being physically active.

### What are the signs and symptoms?

High blood pressure usually has no warning signs or symptoms, so many people don't realize they have it. That's why it's important to visit your doctor regularly. Be sure to talk with your doctor about having your blood pressure checked.

### How is high blood pressure diagnosed?

Your doctor measures your blood pressure by wrapping an inflatable cuff with a pressure gauge around your arm to squeeze the blood vessels. Then he or she listens to your pulse

[1]CDC: Deaths: Final Data for 2009. *www.cdc.gov/nchs/data/nvsr/nvsr60/nvsr60_03.pdf*
[2]CDC: Vital signs: awareness and treatment of uncontrolled hypertension among adults—United States, 2003–2010. *www.cdc.gov/mmwr/preview/ mmwrhtml/mm6135a3.htm*

with a stethoscope while releasing air from the cuff. The gauge measures the pressure in the blood vessels when the heart beats (systolic) and when it rests (diastolic).

How is it treated?

If you have high blood pressure, your doctor may prescribe medication to treat it. Lifestyle changes, such as the ones listed above, can be just as important as taking medicines. Talk with your doctor about the best ways to reduce your risk for high blood pressure.

# KNOW THE FACTS ABOUT

## High Blood Pressure

### What blood pressure levels are healthy?

To determine whether your blood pressure is normal, your doctor examines your systolic and diastolic pressures, which the gauge measures in millimeters of mercury (abbreviated as mmHg).

| | Blood Pressure Levels |
|---|---|
| Normal | systolic: less than 120 mmHg<br>diastolic: less than 80 mmHg |
| At risk (prehypertension) | systolic: 120–139 mmHg<br>diastolic: 80–89 mmHg |
| High | systolic: 140 mmHg or higher<br>diastolic: 90 mmHg or higher |

- Be physically active. Visit CDC's Physical Activity Web site for more information on being active. *http://www.cdc.gov/physicalactivity/ index.html*
- Limit alcohol use. See CDC's Alcohol and Public Health Web site for more information. *http://www.cdc.gov/alcohol*
- Don't smoke. CDC's Office on Smoking and Health Web site has information on quitting smoking. *http://www.cdc.gov/tobacco*

## Can high blood pressure be prevented?

You can take several steps to maintain normal blood pressure levels:

- Getyourbloodpressurechecked regularly.
- Eat a healthy diet. Tips on reducing saturated fat in your diet are available on the Web site for CDC's Division of Nutrition, Physical Activity, and Obesity. *http://www.cdc.gov/nutrition/everyone/basics/fat/saturatedfat.html*
- Maintain a healthy weight. CDC's Healthy Weight Web site includes information and tools to help you lose weight. *http://www.cdc.gov/healthyweight/index.html*
- Prevent or manage diabetes. Visit CDC's Diabetes Public Health Resource for more information. *http://www.cdc.gov/diabetes*

## For More Information

Learn more about high blood pressure at the following Web sites:

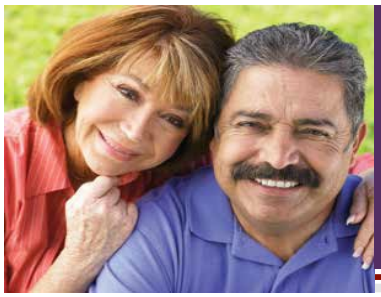
- Centers for Disease Control and Prevention's Division for Heart Disease and Stroke Prevention: *http://www.cdc.gov/dhdsp/index.htm*
- American Heart Association: *http://www.americanheart.org*
- National Heart, Lung, and Blood Institute: *http://www.nhlbi.nih.gov*

From *Know The Facts About High Blood Pressure. (n.d). (https://www.cdc.gov/bloodpressure/docs/consumered_hbp.pdf).* In public domain. Reformatted for inclusion in the current project document.

Appendix H: ABCS of Heart Health

# ABCS of Heart Health

*To reduce the risk of heart attack or stroke*



Every year, Americans suffer more than **1.5 million heart attacks and strokes.** But following the ABCS can help reduce your risk and improve your heart health.

**A:** Take **a**spirin as directed by your health care professional.

**B:** Control your **b**lood pressure.

**C:** Manage your **c**holesterol.

**S:** Don't **s**moke.

## A Take aspirin as directed by your health care professional.

Ask your health care professional if aspirin can reduce your risk of having a heart attack or stroke. Be sure to tell your health care professional if you have a family history of heart disease or stroke, and mention your own medical history.

## B Control your blood pressure.

Blood pressure measures the force of blood pushing against the walls of the arteries. If your blood pressure stays high for a long time, you may suffer from high blood pressure (also called hypertension). High blood pressure increases your risk for heart attack or stroke more than any other risk factor. Find out what your blood pressure numbers are, and ask your health care professional what those numbers mean for your health. If you have high blood pressure, work with your health care professional to lower it.

## C Manage your cholesterol.

Cholesterol is a waxy substance produced by the liver and found in certain foods. Your body needs cholesterol, but when you have too much, it can build up in your arteries and cause heart disease. There are different types of cholesterol: One type is "good" and can protect you from heart disease, but another type is "bad" and can increase your risk. Talk to your health care professional about cholesterol and how to lower your bad cholesterol if it's too high.

## S Don't smoke.

Smoking raises your blood pressure, which increases your risk for heart attack and stroke. If you smoke, quit. Talk with your health care professional about ways to help you stick with your decision. It's never too late to quit smoking. Call 1-800-QUIT-NOW today.



Heart disease and stroke are the first and fourth leading causes of death in the United States. Together, these diseases cause 1 in 3 deaths. **The good news is that you can reduce your risk by following the ABCS!**

Rosa was caring for her granddaughter when she felt a sharp pain in her chest that didn't go away. At the hospital, the health care professional told her that she had high blood pressure and that it had caused a heart attack. Rosa was surprised—she didn't feel bad most of the time and didn't know she had high blood pressure. The health care professional gave Rosa medicine to help control her blood pressure and prevent another heart attack. Rosa takes her medicine every day so she can keep her blood pressure under control. It's important to Rosa to stay healthy. She wants to see her granddaughter grow up and get married one day.

## What do I need to know about high blood pressure?

High blood pressure is the leading cause of heart attack and stroke in the United States. It can also damage your eyes and kidneys. **One in three American adults has high blood pressure, and only about half of them have it under control.**

**How is blood pressure measured?** Two numbers (for example, 140/90) help determine blood pressure. The first number measures systolic pressure, which is the pressure in the blood vessels when the heart beats. The second number measures diastolic pressure, which is the pressure in the blood vessels when the heart rests between beats.

**When and how should I take my blood pressure?** Take your blood pressure regularly, even if you feel fine. Generally, people with high blood pressure have no symptoms. You can take your blood pressure at home, at many pharmacies, and at your doctor's office.

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The doctor is not the only health care professional who can help you follow the ABCS. Nurses, pharmacists, community health workers, health coaches, and other professionals can work with you and your doctor to help you achieve your health goals.

**How can I control my blood pressure?** Work with your health care professional to make a plan for controlling your blood pressure. Be sure to follow these guidelines:

- Eat a healthy diet. Choose foods low in trans fat and sodium (salt). Most people in the United States consume more sodium than recommended. Everyone age 2 and up should consume less than 2,300 milligrams (mg) of sodium per day. Adults age 51 and older; African Americans of all ages; and people with high blood pressure, diabetes, or chronic kidney disease should consume even less than that: only 1,500 mg of sodium per day.
- Get moving. Staying physically active will help you control your weight and strengthen your heart. Try walking for 10 minutes, 3 times a day, 5 days a week.
- Take your medications. If you have high blood pressure, your health care professional may give you medicine to help control it. It's important to follow your health care professional's instructions when taking the medication and to keep taking it even if you feel well. Tell your health care professional if the medicine makes you feel bad. Your health care team can suggest different ways to reduce side effects or recommend another medicine that may have fewer side effects.

## Need confidential health information? Call the Su Familia Helpline at 1-866-783-2645 today.

Su Familia: The National Hispanic Family Health Helpline offers free, reliable information on a wide range of health issues in Spanish and English. The health promotion advisors can help Hispanic clients find affordable health care services in their community.

## Stay Connected

facebook.com/MillionHearts

twitter.com/@MillionHeartsUS

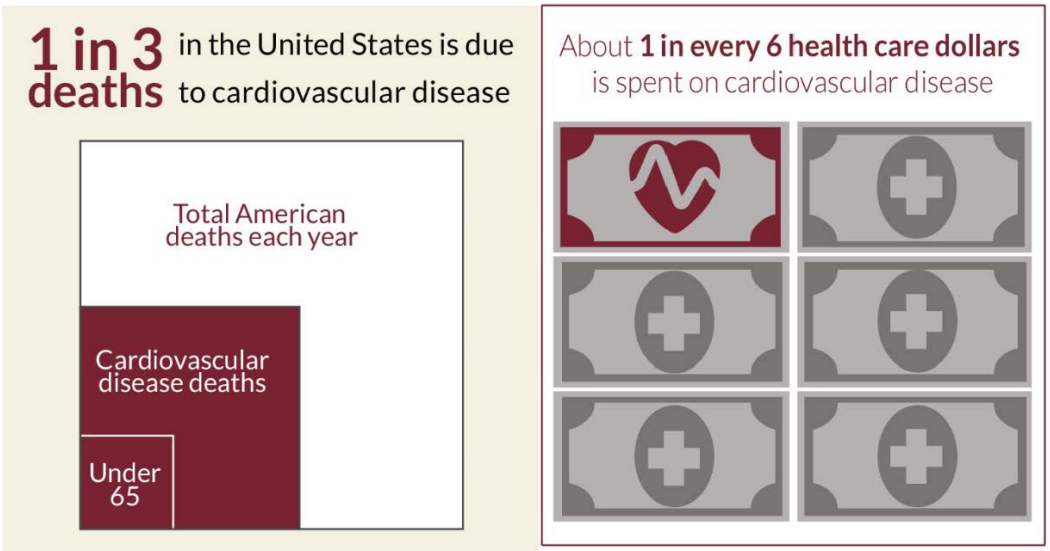
**Visit millionhearts.hhs.gov and pledge to live a longer, healthier life today.**

From *ABCs of Heart Health to reduce the risk of heart attack or stroke. (n.d). (https://millionhearts.hhs.gov/files/4_Steps_Forward_English.pdf ).* In public domain. Reformatted for inclusion in the current project document.

# Appendix I: Costs and Consequences

**Costs & Consequences**

Heart disease and stroke can be fatal, but they can also lead to serious illness, disability, and lower quality of life. Suffering a stroke may lead to significant disability, such as paralysis, speech difficulties, and emotional problems. Following a heart attack, individuals frequently suffer fatigue and depression, and they may find it more difficult to engage in physical activities.




**Key Facts**

Together, heart disease and stroke are among the most widespread and costly health problems facing the nation today. On a personal level, families who experience heart disease or stroke have to deal with not only medical bills but also lost wages and the real potential of a decreased standard of living.

- Approximately 1.5 million heart attacks and strokes occur every year in the United States.
- More than 800,000 people in the United States die from cardiovascular disease each year—that's 1 in every 3 deaths, and about 160,000 of them occur in people under age 65.
- Heart disease kills roughly the same number people in the United States each year as cancer, lower respiratory diseases (including pneumonia), and accidents combined.
- Heart disease and stroke cost the nation an estimated $316.6 billion in health care costs and lost productivity in 2011.

From *Cost & Consequences. (n.d).(https://millionhearts.hhs.gov/learn-prevent/cost-consequences.html).* In public domain.
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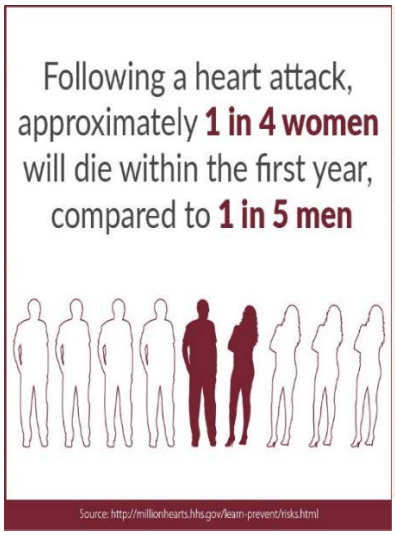
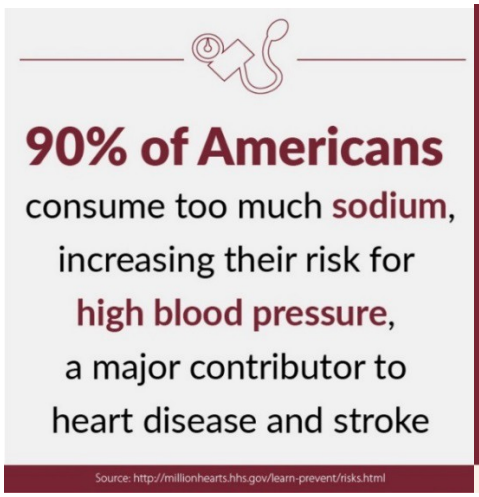
# Appendix J: Risks for Heart Disease & Stroke

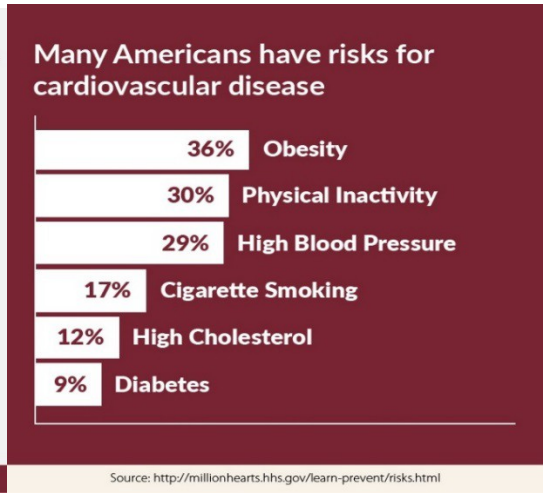
**Risks for Heart Disease & Stroke**

About 1.5 million heart attacks and strokes happen every year in the United States. You can't change some of your risks for heart disease and stroke, but you can manage many of your risks by following a healthy lifestyle.








**Key Facts**

Many risks for heart disease and stroke—including high blood pressure and high cholesterol—may not have any symptoms. Many of these risks—specifically high blood pressure, high cholesterol, smoking, and obesity—are preventable and controllable. Controlling these risks could reduce your risk for heart attack or stroke by more than 80%.

- About 160,000 people who died from cardiovascular disease in 2014 were younger than age 65.
- Heart disease is the leading cause of death for all adults in the United States. Some minority groups are more likely to be affected than others: African Americans have the highest rate of high blood pressure of all population groups, and they tend to develop it earlier in life than others.
- Stroke is the fifth leading cause of death for U.S. adults, but the risk of having a stroke varies. Compared to whites, African Americans are nearly twice as likely to have a first stroke. Hispanic Americans' risk falls between the two. African Americans and Hispanics are more likely to die following a stroke than are whites.
- Individuals with low incomes are much more likely to suffer from high blood pressure, high cholesterol, heart attack, and stroke than their high-income peers.
- The country's highest death rates due to stroke are in the southeastern United States.

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Mozzafarian D, Benjamin EJ, Go AS, Arnett DK, Blaha MJ, Cushman M, et al. on behalf of the American Heart Association Statistics Committee and Stroke Statistics Subcommittee. Heart disease and stroke statistics—2016 update: a report from the American Heart Association. *Circulation* 2016;133:e38–360.

**Stroke:**
Mozzafarian D, Benjamin EJ, Go AS, Arnett DK, Blaha MJ, Cushman M, et al. on behalf of the American Heart Association Statistics Committee and Stroke Statistics Subcommittee. Heart disease and stroke statistics—2016 update: a report from the American Heart Association. *Circulation* 2016;133:e38–360.

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**Cardiovascular disease risks:**
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**Obesity:** Ogden CL, Carroll MD, Fryar CD, Flegal KM. Prevalence of obesity among adults and youth: United States, 2011–2014. NCHS data brief no. 219. Hyattsville (MD): National Center for Health Statistics; 2015.
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**Cigarette Smoking:** Jamal A, Homa DH, O'Connor E, Babb SD, Caraballo RS, Singh T, et al. Current cigarette smoking among adults—United States, 2005–2014. MMWR 2015;64(44):1233–40.
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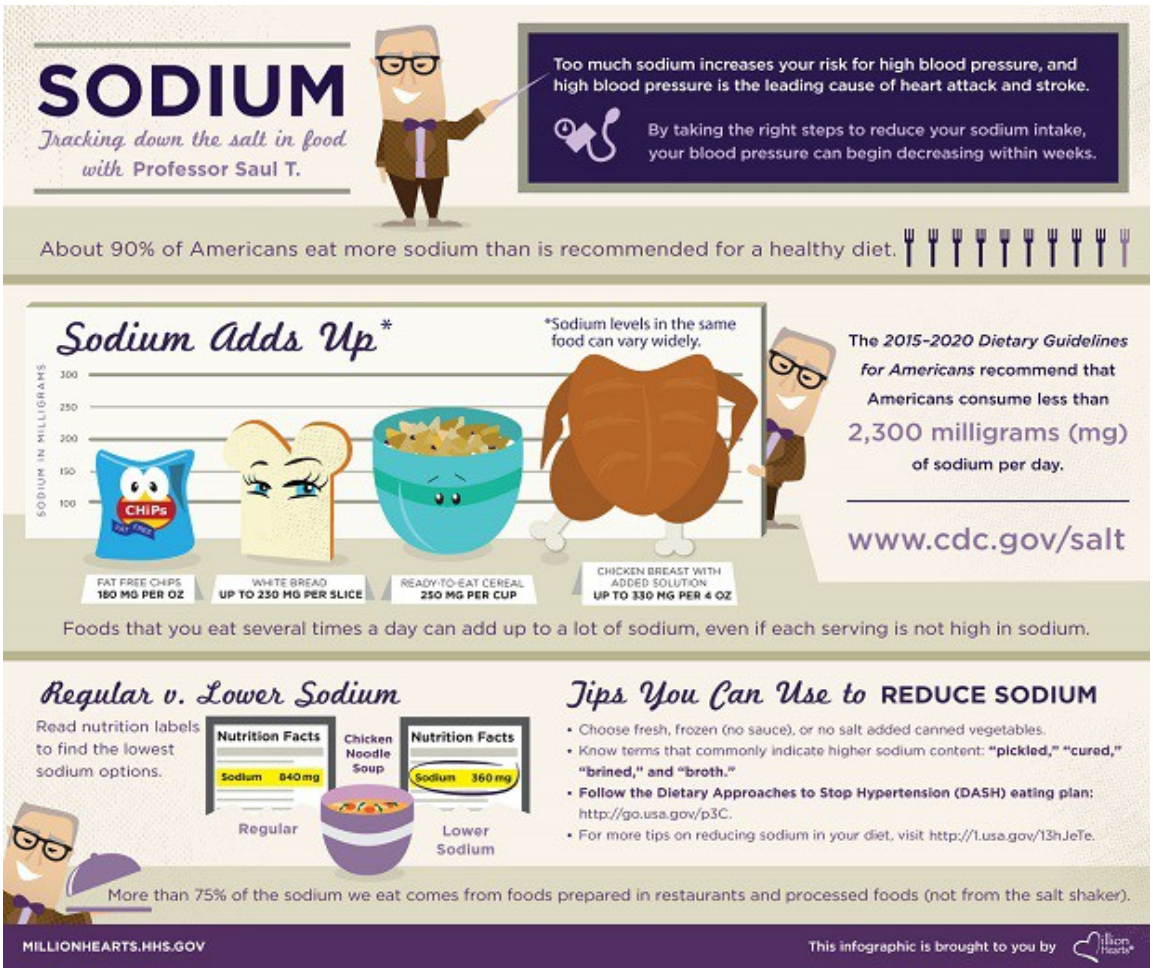
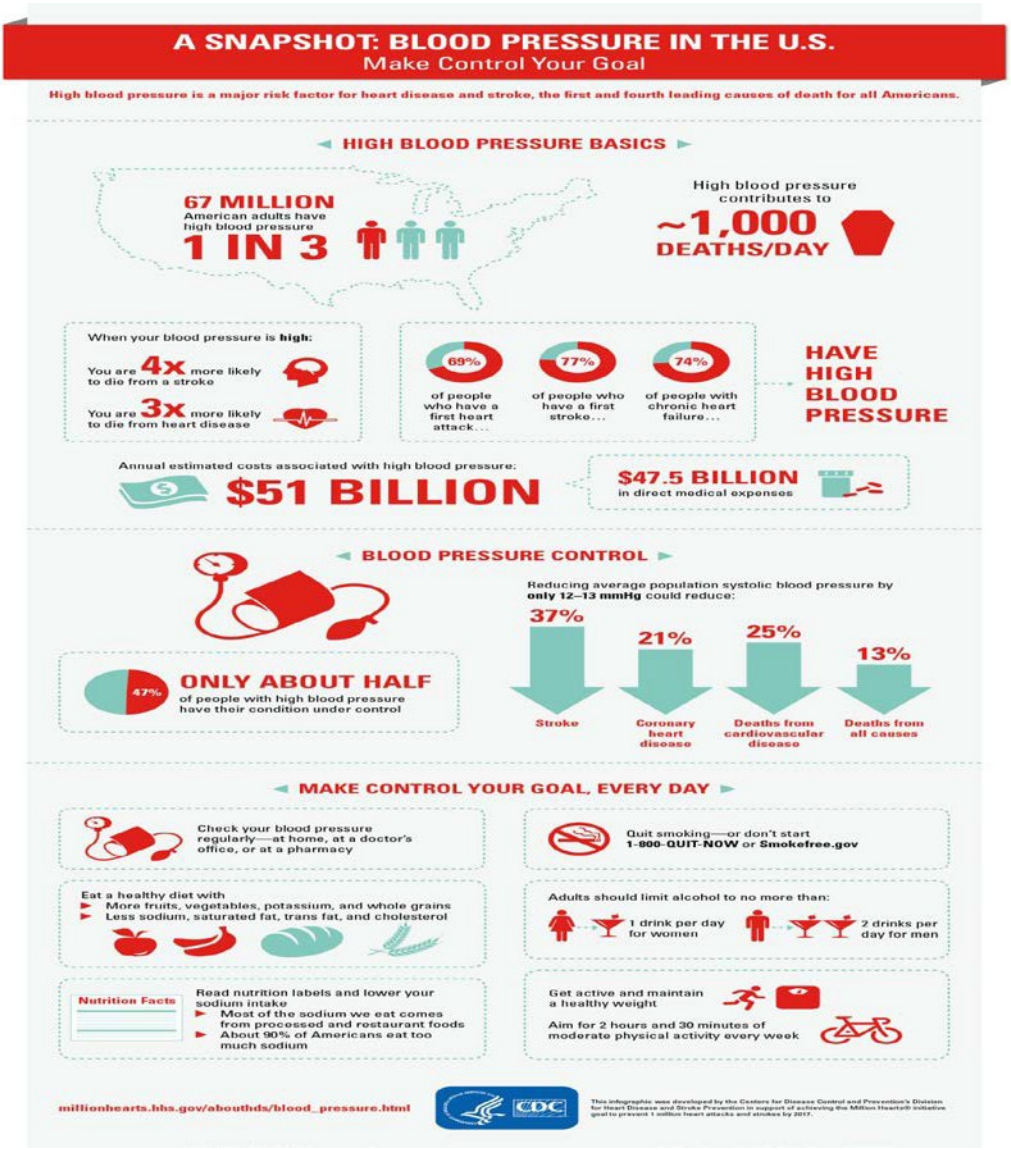
From *Risk for Heart Disease and Stroke. (n.d). (https://millionhearts.hhs.gov/learn-prevent/risks.html).* In public domain. Reformatted for inclusion in the current project document.

Appendix K: Sodium Tracking Down the Salt in Food




From *Sodium Tracking Down the Salt in Food .(n.d). (https://www.cdc.gov/salt/sodium_infographics.htm).* In public domain. Reformatted for inclusion in the current project document.

# Appendix L: A Snapshot: Blood Pressure




From *A Snapshot: Blood Pressure. (n.d). (https://www.cdc.gov/bloodpressure/infographic.htm).*
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Appendix M: High Blood Pressure: How to Make Control Your Goal

## Blood Pressure

### How to Make Control Your Goal

**It's up to you** to successfully manage and control your blood pressure. But it doesn't have to be a daunting task. You can take small, manageable steps to make blood pressure control **your** goal. Here are some tips to show you how.

**Engage your health care team** Blood pressure control is a team effort. Engage all of your health care professionals— not just your primary care physician or cardiologist. Your pharmacist, nurses, and other health care specialists can help you control your high blood pressure. Next time you go in for a visit, make a list of questions you want to ask your health care professional. For example:

- What is my blood pressure goal
- What are the best ways to reach my goal?
  - Mention what you're already doing to work toward control, including exercising, changing your diet, or taking medications as prescribed.
  - Be honest and realistic with yourself and your healthcare team about what lifestyle changes you're ready to make and the ones you're not quite ready for.
  - Pick one goal to start working toward. As you achieve success and build confidence, choose another goal to tackle.

Did **you know?**

Of the75 million American adults who have high blood pressure, only about half (54%) of these people have their blood pressure under control.

### Take your medications faithfully

Your health care team has put together a specific medication schedule to help control your blood pressure. You might forget to take your medicine every day, or maybe you're having trouble dealing with the side effects. Remember that your medication is important to control and maintain your blood pressure. Here are some tips to help you stick with your medication plan:

- Talk to your doctor about any side effects you experience with your medications. If necessary, discuss other treatment options. **Never stop treatment on your own.**
- Make a schedule and set up a system to remind you to take your medications regularly—use a pillbox for every pill, every day, or use smartphone "app" reminders.
  - If your insurance provides mail order delivery, set it up and request a 90-day supply of medications.
  - If this service is not available, schedule all your refills at the same pharmacy at the same time each month so you can pick them up all at once.

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Make control your goal.

Don's Story

As an avid runner, Don thought he was in great shape. When he was diagnosed with high blood pressure during a routine physical exam more than 30 years ago, Don was frustrated. High blood pressure is a common condition among men in his family. Don's grandfather, father, and two younger brothers all had high blood pressure. Because he knew he couldn't control his family history, Don focused on what he could control.

Don committed to understanding his condition and working with his health care team to improve diet, exercise more, and manage stress. Because of his busy work schedule as a veterinarian and his limited cooking skills, Don's wife supports his efforts by preparing healthy, low sodium meals. No longer able to run marathons, Don walks several times a day with his 15-year-old dog, Sophie. To help relax, Don meditates every day. He also volunteers at a local hospice and shares his love for animals by instructing and evaluating animal-assisted therapy volunteers and working with two animal outreach groups.

Don knows that he plays the most important role in controlling his high blood pressure; that's why he's made control his goal. He works closely with his health care team and has a strong support system in his family and colleagues.

## Monitor your blood pressure

What's your blood pressure goal? Develop a plan to regularly check your blood pressure, not just at the doctor's office but at home or at a pharmacy. Track your results in a log or diary to monitor your progress.

## Make healthy choices

- Exercise can be a great way to help control your blood pressure. Find a safe place to walk or be more active. Increase the time and intensity of your physical activity as you progress.
- Shop for more fresh fruit, vegetables, and whole grains and fewer prepared foods with high sodium, cholesterol, saturated fat, and trans fat.
- Learn to read labels and choose foods lower in sodium. Lowering your sodium intake can help lower your blood pressure.
- Quit smoking. There are many tools available to help you. Call 1-800-QUIT- NOW or visit **Smokefree.gov** for help

### Tools and resources

Million Hearts®, in partnership with the American Heart Association/American Stroke Association, has developed online tools to help you track and manage your heart health, including your blood pressure, and provide helpful advice and information. Check out:

- Heart360®
- **My Life Check®**
- Find and download additional materials to help control your high blood pressure at the **MillionHearts®** website:

### Heart Age Calculator

### Blood Pressure Wallet Card

**Million Hearts®** is a national initiative to prevent 1 million heart attacks and strokes by 2017. It is led by the Centers for Disease Control and Prevention and the Centers for Medicare & Medicaid Services, two agencies of the Department of Health and Human Services. The Million Hearts® word and logo marks and associated trade dress are owned by the U.S. Department of Health and Human Services (HHS). Use of these marks does not imply endorsement by HHS.

**millionhearts.hhs.gov**

Source: http://www.cdc.gov/bloodpressure/facts.htm

From *High Blood Pressure: How to Make Control Your Goal. (2016). (Source: http://www.cdc.gov/bloodpressure/facts.htm).* In public domain. Reformatted for inclusion in the current project document.

# Appendix N: Newest Vital Sign


Dear Healthcare Professional:

Thank you for your interest in the Newest Vital Sign (NVS), the first tool available to assess health literacy in English and Spanish.

Research shows that patients with low health literacy are less likely to comply with prescribed treatment and medical instructions from their physician. Identifying patients who are at risk for low health literacy allows physicians to apply specific clear health communication techniques that may enhance understanding. The NVS is a simple and fast way to identify those patients.
The tool, which tests literacy skills for both numbers and words*, has been validated against a previously validated measure of health literacy (test of functional health literacy in adults, the TOFHLA) and has been shown to take approximately 3 minutes to administer.

In addition to the NVS tool, we are also including information to help enhance patient-provider communication. In this folder, you will find the following materials:

- NVS Tool (nutrition label and scoring sheet tear-off pad, both two-sided in English/Spanish)
- The NVS Implementation Guide
- *Ask Me 3* (fact sheet on free educational materials from the non-profit Partnership for Clear Health Communication)
- *Help Your Patients Succeed* (tips for improving communication with your patients)
- *Why Does An Ice Cream Label Work* (fact sheet explaining NVS design)

The Newest Vital Sign is Pfizer Inc's most recent contribution to the health literacy movement. For more than nine years, Pfizer has been committed to raising awareness of developing solutions for low health literacy. The overall goal of our Clear Health Communication Initiative is to positively impact the health care system by enhancing patient-provider communication to increase compliance and improve patient health outcomes.

The Newest Vital Sign and companion materials are available to medical, private, and public health providers at no cost. To learn more about our efforts to improve health literacy, please visit www.pfizerhealthliteracy.com.

Sincerely,
Richard C. Hubbard, M.D.
Senior Director, External Medical Affairs Pfizer Inc

*Literacy is defined as the understanding and application of words (prose), numbers (numeracy), and forms, etc. (document).


February 2011


## Implementation Guide for the Newest Vital Sign

Health literacy—the ability to read, understand, and act upon health information—is now known to be vital for good patient care and positive health outcomes. According to the Institute of Medicine's groundbreaking report on health literacy, nearly half of all American adults—90 million people—have difficulty understanding and using health information. When patients lack the ability to understand and act upon medical information, it can put their health at risk.

The Newest Vital Sign (NVS) is a new tool designed to quickly and simply assess a patient's health literacy skills. It can be administered in only 3 minutes and is available in English and Spanish. The patient is given a specially designed ice cream nutrition label to review and is asked a series of questions about it. Based on the number of correct answers, health care providers can assess the patient's health literacy level and adjust the way they communicate to ensure patient understanding.

There are many ways to integrate the NVS into a private practice or clinic setting to improve communication with patients. Improved communication can help increase your patients' ability to understand and act upon the information you provide, ultimately improving patient satisfaction and health outcomes.

## How to Use the Newest Vital Sign

### 1. Who and when to administer the Newest Vital Sign.

- **A nurse (or other trained clinic staff)** is the preferred administrator of the Newest Vital Sign.
- Administer at the same time that other vital signs are being taken.

### 2. Ask the patient to participate.

A useful way to ask the patient is an explanation similar to this:
*"We are asking our patients to help us learn how well they can understand the medical information that doctors give them. Would you be willing to help us by looking at some health information and then answering a few questions about that information? Your answers will help our doctors learn how to provide medical information in ways that patients will understand. It will only take about 3 minutes."*

### 3. Hand the nutrition label to the patient.

The patient can and should retain the nutrition label throughout administration of the Newest Vital Sign. The patient can refer to the label as often as desired.

1. **Start asking the 6 questions, one by one, giving the patient as much time as needed to refer to the nutrition label to answer the questions.**

   - There is no maximum time allowed to answer the questions. The average time needed to complete all 6 questions is about 3 minutes. However, if a patient is still struggling with the first or second question after 2 or 3 minutes, the likelihood is that the patient has limited literacy and you can stop the assessment.

   - **Ask the questions in sequence.** Continue even if the patient gets the first few questions wrong. However, **if question 5 is answered incorrectly, do not ask question 6.**
   - **You can stop asking questions if a patient gets the first four correct.** With four correct responses, the patient almost certainly has adequate literacy.

   - **Do not prompt patients who are unable to answer a question.** Prompting may jeopardize the accuracy of the test. Just say, "Well, then let's go on to the next question."

   - **Do not show the score sheet to patients.** If they ask to see it, tell them that "I can't show it to you because it contains the answers, and showing you the answers spoils the whole point of asking you the questions."

   - **Do not tell patients if they have answered correctly or incorrectly.** If patients ask, say something like: "I can't show you the answers till you are finished, but for now you are doing fine. Now let's go on to the next question."

2. **Score by giving 1 point for each correct answer (maximum 6 points).**
   - **Score of 0-1** suggests high likelihood (50% or more) of limited literacy.
   - **Score of 2-3** indicates the possibility of limited literacy.
   - **Score of 4-6** almost always indicates adequate literacy.
   - **Record the NVS score** in the patient's medical record, preferably near other vital sign measures.

**Best Practices for Implementation: Summary**

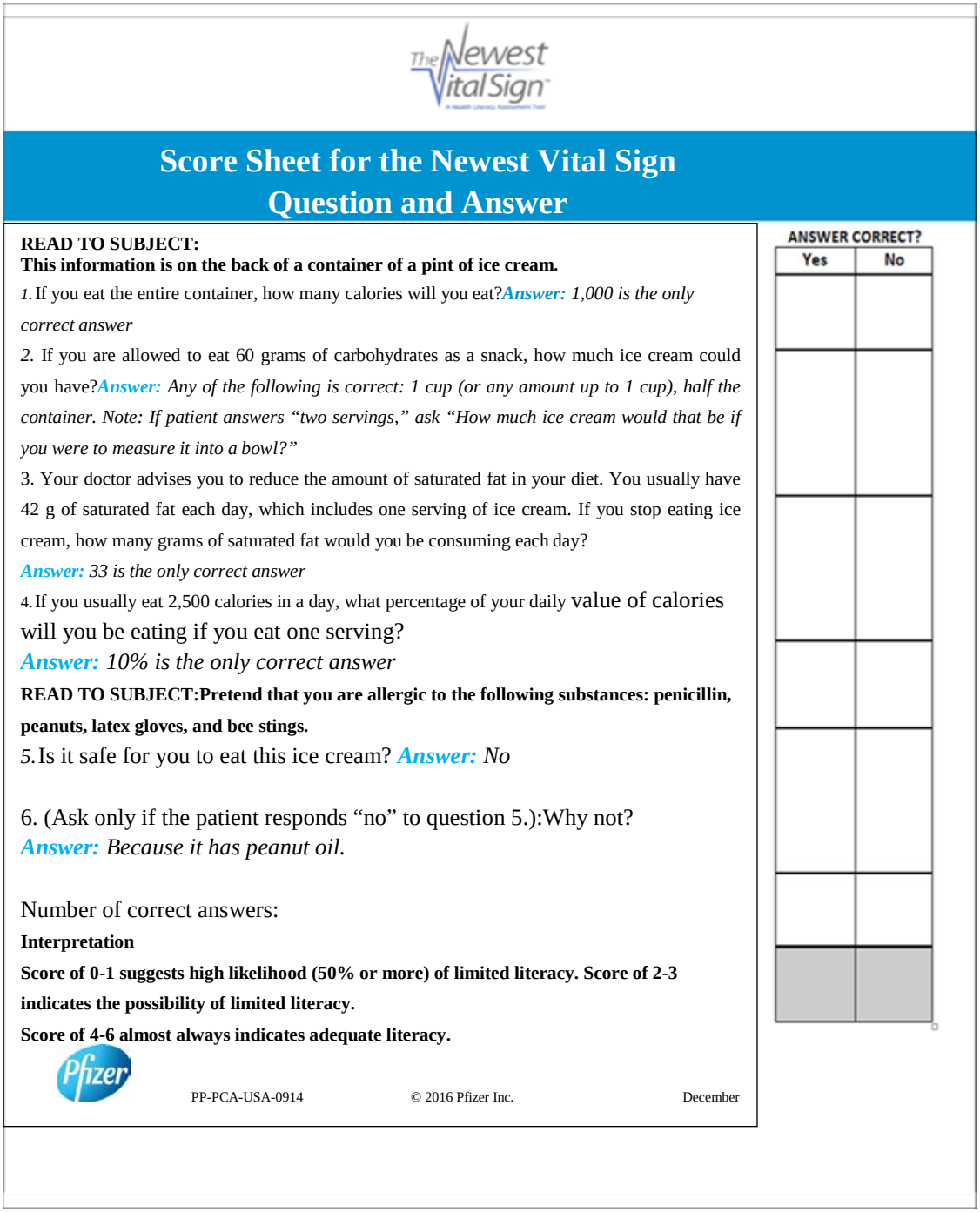
- A nurse (or other trained clinic staff) is the preferred administrator of the NVS.
- Administer the NVS at the same time that the patient's other vital signs are being taken.
- Record the NVS score in the patient's chart, preferably near other vital sign measures.
- Tailor communication to ensure patient understanding.

**Nutrition Facts**

| | |
|---|---|
| Serving Size | ½ cup |
| Servings per container | 4 |
| Amount per serving | |
| Calories 250 | Fat Cal 120 |
| | %DV |
| **Total Fat** 13g | 20% |
| Sat Fat 9g | 40% |
| **Cholesterol** 28mg | 12% |
| **Sodium** 55mg | 2% |
| **Total Carbohydrate** 30g | 12% |
| Dietary Fiber 2g | |
| Sugars 23g | |
| **Protein** 4g | 8% |

*Percentage Daily Values (DV) are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

**Ingredients:** Cream, Skim Milk, Liquid Sugar, Water, Egg Yolks, Brown Sugar, Milkfat, Peanut Oil, Sugar, Butter, Salt, Carrageenan, Vanilla Extract.



The Newest Vital Sign

## Score Sheet for the Newest Vital Sign Question and Answer

**READ TO SUBJECT:**
**This information is on the back of a container of a pint of ice cream.**

1. If you eat the entire container, how many calories will you eat? ***Answer:*** *1,000 is the only correct answer*

2. If you are allowed to eat 60 grams of carbohydrates as a snack, how much ice cream could you have? ***Answer:*** *Any of the following is correct: 1 cup (or any amount up to 1 cup), half the container. Note: If patient answers "two servings," ask "How much ice cream would that be if you were to measure it into a bowl?"*

3. Your doctor advises you to reduce the amount of saturated fat in your diet. You usually have 42 g of saturated fat each day, which includes one serving of ice cream. If you stop eating ice cream, how many grams of saturated fat would you be consuming each day?

***Answer:*** *33 is the only correct answer*

4. If you usually eat 2,500 calories in a day, what percentage of your daily value of calories will you be eating if you eat one serving?

***Answer:*** *10% is the only correct answer*

**READ TO SUBJECT:Pretend that you are allergic to the following substances: penicillin, peanuts, latex gloves, and bee stings.**

5. Is it safe for you to eat this ice cream? ***Answer:*** *No*

6. (Ask only if the patient responds "no" to question 5.):Why not?

***Answer:*** *Because it has peanut oil.*

Number of correct answers:

**Interpretation**

**Score of 0-1 suggests high likelihood (50% or more) of limited literacy. Score of 2-3 indicates the possibility of limited literacy.**

**Score of 4-6 almost always indicates adequate literacy.**

| ANSWER CORRECT? | |
|---|---|
| Yes | No |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

Pfizer

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