5-2-2023

The Effect of Implementing Behavioral Counseling for Elevated LDL Levels

Blake L. Hansen

THE EFFECT OF IMPLEMENTING BEHAVIORAL COUNSELING FOR ELEVATED LDL LEVELS

by

BLAKE L. HANSEN BSN, RN

EVIDENCE-BASED PRACTICE PROJECT REPORT

Submitted to the College of Nursing and Health Professions

of Valparaiso University,

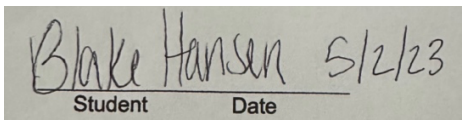
Valparaiso, Indiana

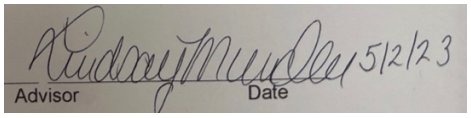
in partial fulfillment of the requirements

For the degree of

DOCTOR OF NURSING PRACTICE

2023





ACKNOWLEDGMENTS

I must acknowledge the people who made this project possible and my degree at Valparaiso a reality.

To my loving family, without your support, I could not have made it where I am today. Whether it be in my career, my faith, or my happiness, I owe it all to my family and their never-ending desire to support me and my dreams.

To my husband, you are a blessing in so many ways. You have never questioned my ability to succeed, or my desire to be a working mother. You have never doubted my potential, or desire to pursue my passions. You have, however, continued to show up for me and our family every day that I have known you and even more so throughout this program. I am beyond lucky to have found a man like you and love you more than you will ever know.

To my son, thank you for bringing such joy to my life that I never knew I needed. Thank you for making me smile on days where it is easy to frown. Thank you for teaching me how to love in ways I did not know existed. You are such a special boy, and are destined for great things. Never let your shining light dim. Follow your dreams, and live a life that you can forever be proud of.

I would like to thank all of my professors for getting me to this point in my program. This day and these accomplishments could not be possible without each and every one of you.

To Ashley and Kenneth, I am not sure I would be standing here today without your support throughout this program and the stress that has accrued over these last three years. You both are blessings from above and I cannot thank you enough.

Lastly, I want to thank my advisor, Lindsey Munden, who provided continuous guidance and counsel throughout this project. I hold such high respects for both you and your contributions to the nursing profession.

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ABSTRACT

Hyperlipidemia is a key risk factor in cardiovascular mortality, and is prevalent in approximately 38% of American adults (CDC, 2022b). Cholesterol levels are intensified by unhealthy lifestyle choices, which means a change in lifestyle behaviors could prevent cardiovascular related deaths (WHO, 2022). The PICOT question for this project was: In adults aged 20 years or older in the primary care setting who have elevated low-density lipoprotein (LDL) levels (P), does the implementation of behavioral counseling on lifestyle modifications (I) compared to current practice (C) decrease LDL levels (O) over a 10- to 12- week period (T)? Fourteen participants from a small direct primary care clinic in Indiana completed the entirety of the project. LDL levels were measured pre-intervention, along with a rapid assessment of physical activity (RAPA) and the rate your plate (RYP) tool, blood pressure (BP), body mass index (BMI), weight, and atherosclerotic cardiovascular disease (ASCVD) risk scores. The nurse practitioner initiated a behavioral counseling session on lifestyle modifications, assisted by educational handouts, and created three healthy goals with the participant. A follow-up telephone counseling session was scheduled at five weeks to review those goals, followed by an in-person counseling session at 10- to 12- weeks. LDL levels were redrawn and the RYP and RAPA tools, weight, BMI, BP and ASCVD scores were completed once more to show a within-group evaluation of pre- and post-intervention outcomes. A paired *t*-test was used for analysis, and statistically significant data was found by increased RYP scores ($p = .001$), increased RAPA scores ($p = .004$), weight reduction ($p = .035$), BMI reduction ($p = .026$), systolic BP reduction ($p = .025$), and ASCVD score reduction ($p = .002$). There was no statistical significance in LDL reduction ($p = .051$); however, there was still a decrease in mean scores pre- (137.36) and post- (114.43) intervention. These findings support the use of behavioral counseling for lifestyle modifications in patients with elevated LDL levels.

Keywords: LDL, RYP, RAPA, behavioral counseling, lifestyle modifications, ASCVD

CHAPTER 1

INTRODUCTION

Background

Cardiovascular disease (CVD) is the leading cause of death for both men and women, and most racial and ethnic groups in the United States (US) and worldwide (Centers for Disease Control and Prevention (CDC), 2022c; World Health Organization (WHO), 2022). Globally, nearly 32% of all deaths occur from CVD (WHO, 2022). Nationally, one in every four deaths occur from heart disease, which accounts for one death every 36 seconds (CDC, 2022c). This disease accounts for many health care visits and increased healthcare costs, which approximates 363 billion US dollars every year (CDC, 2022c), and 863 billion dollars worldwide, with a projected 22% rise in cost by the year 2030 (Karmali et al., 2017).

Key risk factors for CVD include high blood pressure (hypertension), high cholesterol (hyperlipidemia), and smoking (CDC, 2022a). These risk factors are modifiable and intensified by a sedentary lifestyle, including being overweight or obese, having an unhealthy diet, being physically inactive or excessive alcohol use (CDC, 2022c). Most CVD related deaths could be prevented with changes in lifestyle behaviors which may prevent up to 75% of CVD reported deaths worldwide (WHO, 2022). "More than half the reduction in cardiovascular mortality has been attributed to changes in risk factors in the population, especially reduction of cholesterol…" (Gonzalez-Sanchez et al., 2019, p 14). Blood cholesterol in particular is an important risk factor because it has no associated symptoms, but plays a major role within the body. Cholesterol is created within the liver to assist in developing hormones and digesting fatty foods; however, the body makes all the cholesterol it needs, so little ingested cholesterol is actually required (CDC, 2022b). Cholesterol is a waxy, fatty-like substance that contributes to CVD due to excessive build up that blocks the flow of blood in the arteries and veins (Grundy et al., 2019). Moreover, low-density lipoprotein (LDL) is a dominant form of atherogenic cholesterol, and levels over 100

mg/dl in the blood are considered elevated and may lead to atherosclerotic cardiovascular disease (ASCVD) (Grundy et al., 2019). Atherosclerosis progresses as an individual ages (Grundy et al., 2019), so the need to control this risk factor is vital in lowering the risk for ASCVD.

Data Supporting Need for the Project

Global, National, Regional, and State Data

As noted previously, CVD is the leading cause of death worldwide. This accounts for a national average of 422.4 deaths per 100,000 people (CDC, 2022d), and approximately 17.9 million deaths globally every year (WHO, 2022). Indiana's CVD death rates average higher than the national average at 462.5 per 100,000 deaths, and the northwest part of the state ranges from 418.5 in Porter County, 505.4 in Lake County, and 532.2 per 100,000 in LaPorte county (CDC, 2022d).

When evaluating high cholesterol prevalence, about 38% of American adults have hyperlipidemia (CDC, 2022b). Comparing Indiana to the national average, prevalence ranges from 35.9% in Lake County, 35.4% in Porter County, and 36.3% in LaPorte county (CDC, 2022d). Of these three counties, only about 80.1 to 81.7% of people are actually participating in screenings for hyperlipidemia, which may skew the data available for these demographic regions (CDC, 2022d). These statistics demonstrate how northwest Indiana contributes to the rising prevalence of hyperlipidemia overall, and provides support for the need to prevent these diseases from occurring.

Clinical Agency Data

According to key stakeholders at the clinical site for this evidence-based practice (EBP) project, an employee-based primary care wellness clinic in northwest Indiana, patients frequently have elevated LDL levels but are hesitant to start medications to help lower their results and risk for developing CVD. According to the organization's data analytics team, a total of 533 patients have utilized this clinic from January 1, 2022 through June 1, 2022, and 168 of them have elevated LDL levels over 100mg/dl (C. Sileo, personal communication, July 13, 2022). This

means 32% of the patients frequenting the office have at least one risk factor for CVD. In further review, none of their charts contained a documented 10-year ASCVD risk score. With a generous percentage of patients with elevated LDL levels and the lack of identified ASCVD risk, a need for EBP was acknowledged.

The nurse practitioner (NP), who is the sole provider within this clinic, reports patients are often seeking advice on how to best modify their lifestyle in hopes to better their health and avoid taking medications (R. Zimmerman, personal communication, May 18, 2022). The NP's standard of care was to refer all patients with elevated LDL levels to an organization employed dietician, which is a covered expense for patients who utilize the clinic services. However, there are only a couple of dieticians currently working for the company nationwide, and due to their workload, the dieticians have opted to end their virtual support for several clinics in this region. The project site is unfortunately one of the offices that has been affected. Thus, all dietician referrals are conducted outside of the organization indefinitely, making the use of a dietician no longer free of charge. This change has impacted the referral process, and has created a further need for intervention in the perspective of the NP, with regards to the lifestyle habits these individuals need to focus on to lower LDL levels.

During the project planning phase, the Doctor of Nursing Practice (DNP) student met with a formerly utilized dietician to gain an idea of what education and support these patients used to receive from their virtual sessions. The dietician referred to these sessions as coaching, and reported that each dietician within the organization has three main goals for education on hyperlipidemia: (1) to promote healthful eating patterns that will achieve body weight goals, attain lipid goals, and delay complications of CVD, (2) to address individual nutrition needs based on personal and cultural preferences, health literacy, access to healthy foods, willingness, and ability to make lifestyle changes, and (3) provide practical tools for developing healthy lifestyle patterns that will prevent CVD and reduce the dose level of medications needed to control lipids (L. Martin, personal communication, June 6, 2022). The main tool she supported was the use of

journaling, but admits to using the MyFitnessPal application (MyFitnessPal, Inc., 2022) for certain individuals that may not succeed in journaling for self-regulation. She voiced that what really helps the patient is having a simple conversation tailored to what they are feeling, creating realistic goals that are achievable for the individual, and always trying to “add to their day, not take away from their day” (L. Martin, personal communication, June 6, 2022). These patient driven conversations are tailored to personal preferences, while sticking to organization provided guidelines for dietary patterns for hyperlipidemia, including: (1) increasing fruits, vegetables, whole grains, legumes, nuts, seeds, low-fat dairy, skinless poultry, fish, and non-tropical vegetable oils, (2) limiting sweets intake, sugar-sweetened beverages, and red meat, (3) aiming to consume 5-6% of total calories from saturated fat, and (4) including good sources of fiber in daily eating habits with a minimum of 31 grams per day (L. Martin, personal communication, June 6, 2022). Following each coaching session, another visit is scheduled with a goal to conduct 16 one-hour, one-on-one virtual sessions in a 24-week timeframe. She added that in her opinion, even though she spends a lot of time educating the patients on healthy lifestyle patterns to lower LDL levels, they tend to listen to what the provider says more than what she has to say, further adding to the need for the EBP project.

After meeting with the dietician, the DNP student met with the clinic NP to understand how the current practice for elevated LDL levels has changed since access to a free dietician has ceased. The NP reports there is no company policy that he follows in regards to cholesterol management, and treatment is based on his clinical decision making (R. Zimmerman, personal communication, June 14, 2022). Patients with employers who buy into this company model can utilize the clinic free of charge, meaning provider visits, laboratory testing, and a select list of medications dispensed at the clinic are free of charge. Among this list of medications are several cholesterol lowering agents, including three different statin drug therapies. The NP reports this aspect of care leads to high rates of clinic utilization, annual lab work completion, and medication adherence (R. Zimmerman, personal communication, June 14, 2022). Once annual lab work is

documented in the chart, which includes a lipid panel, a provider visit is scheduled to review these labs and an annual wellness exam is completed. The NP did clarify that this is not an enforced requirement to be seen by the NP annually, however, those patients that want medications, labs, and free consults are generally compliant and present to the clinic at least once a year. Based on the patient lab results, the NP suggests a treatment plan if an elevated LDL level over 100 mg/dl is generated. He reports almost always suggesting statin therapy, but also suggests decreasing intake of saturated fats and fast-food consumption. No other education is usually provided unless prompted by the patient. This lack of education may be due to a lack of comfort the NP has with educating in general, or a contributing factor could be the lack of time during the annual wellness exam (R. Zimmerman, personal communication, June 14, 2022). The NP does report utilizing a shared-decision approach to care, allowing the patient to decide if they want to try and lower their cholesterol levels on their own, or start statin drug therapy. Regardless of the option chosen, a repeat lipid panel is then scheduled for six months to assess the treatment modality of choice (R. Zimmerman, personal communication, June 14, 2022). Given the differences between the dietician education and the providers education, it is clear there is a need for this EBP project.

Purpose of the Evidence-Based Practice Project

Purpose Statement and PICOT Question

The purpose of this patient-centered, EBP project is to evaluate the effectiveness of a multifaceted behavioral counseling intervention that utilizes goal setting, educational supplements, and tools centered around improving LDL levels through lifestyle modifications in a primary care practice setting. Specifically, this project will address the following PICOT question: In adults aged 20 years or older in the primary care setting who have elevated LDL levels (P), does the implementation of behavioral counseling on lifestyle modifications (I) compared to current practice (C) decrease LDL levels (O) over a 10- to 12- week period (T)?

EBP Project Description

The EBP project will take place in an employee-based primary care wellness clinic focused on treating patients across the lifespan. A key stakeholder for this project is the site facilitator, a certified family nurse practitioner (FNP), who will take part in implementing the EBP intervention along with serving as a liaison between the DNP student, and other key stakeholders within the company. In addition to the FNP, the office staff will be incorporated in the implementation and longevity of this intervention, and include: an administrative assistant (AA), a registered nurse (RN), a patient advocate, and a certified medical assistant (CMA). The FNP, AA, patient advocate, RN, and CMA will receive an hour-long briefing, from the DNP student, which will include an educational PowerPoint that reviews CVD, cholesterol, cholesterol and ASCVD screening, cholesterol management, and behavioral counseling (Appendix A). The project will be reviewed with the office staff on August 17th, 2022, and each individual's role will be addressed during the briefing so the roles of each staff member are understood by everyone in the office. After the presentation, paper copies of the PowerPoint will be given to the staff for continued utilization, and the DNP student will frequently check in with the staff throughout the 10-week implementation period to ensure knowledge of the intervention stays consistent.

The population of interest for the project is adults, 20 years of age and older, who seek care in this primary care clinic. Participants will be selected from a convenience sample of patients who receive care at the clinic and have been identified to have elevated LDL levels over 100 mg/dl within the past six months' time. This information has been provided by the data analytics team, to the DNP student, in a spreadsheet containing the patient names, birthdates, LDL levels, and date the lab was conducted. The DNP student will be responsible for arranging appointments to repeat lipid panels for those with LDL levels greater than two weeks old. For those patients who have had a blood draw recently, or within a two-week timeframe, they will receive a phone call and the option to set an appointment with the NP, or continue with their usual care. In addition to the patient's being contacted, the intervention will become routine care

for anyone having annual lab work completed or those who present with a newly elevated LDL level.

The initial visit with the FNP will be conducted on those individuals identified, and a physical exam and history will be completed, including: vital signs, BMI, height, weight, smoking and alcohol history, medication reconciliation, family history, laboratory results, and a ASCVD 10-year risk assessment. These patients will also be given two questionnaires to assess their physical activity and dietary habits: the Rapid Assessment of Physical Activity (RAPA) (University of Washington Health Promotion Research Center, 2006), and the Rate Your Plate (RYP) tool (U.S. Department of Agriculture, 2016) (Appendix B). Behavioral counseling for lifestyle modifications will be completed at the initial visit with the FNP, who will utilize handouts to reinforce this education and send home with the patient (Appendix C). A media component, in the form of a lifestyle app, will be addressed during the behavioral counseling with the goal to support patients with self-monitoring and regulation at home. The FNP will mention and educate patients on several different lifestyle applications (apps) available free of charge, however, it will be at the discretion of the individual if they want to utilize this component during their modifications. Lastly, the FNP will assist the patient in setting three achievable goals, which will be documented in the electronic medical record (EMR) and evaluated at the return visits.

The initial visit will be conducted over 45-minutes, with approximately 20-minutes allocated to behavioral counseling. A 30-minute telephone follow-up visit will then be scheduled for five weeks, and a 45-minute in-person, one-on-one visit will be scheduled for 10 weeks. These follow-up visits will focus on enforcing the behavioral counseling conducted during the first appointment and will be completed by the FNP. At each visit, approximately 20-minutes will be dedicated to the behavioral counseling, and at the 10- to 12- week visit the additional 15-minutes will be allocated for a repeat lipid panel, height, weight, BMI, smoking and alcohol history, medication reconciliation, and ASCVD 10-year risk assessment. Additionally, the RAPA and RYP tools will be reissued to determine the success of the multimodal intervention, along with a

patient self-report of the utilization of a lifestyle app for self-monitoring. The goal of this project, based on the evidence supporting these interventions, is to note a decrease in patient LDL levels at the 10- to 12- week lipid panel compared to the initial elevated LDL level documented.

CHAPTER 2

EBP MODEL AND REVIEW OF LITERATURE

Evidence-based Practice Model

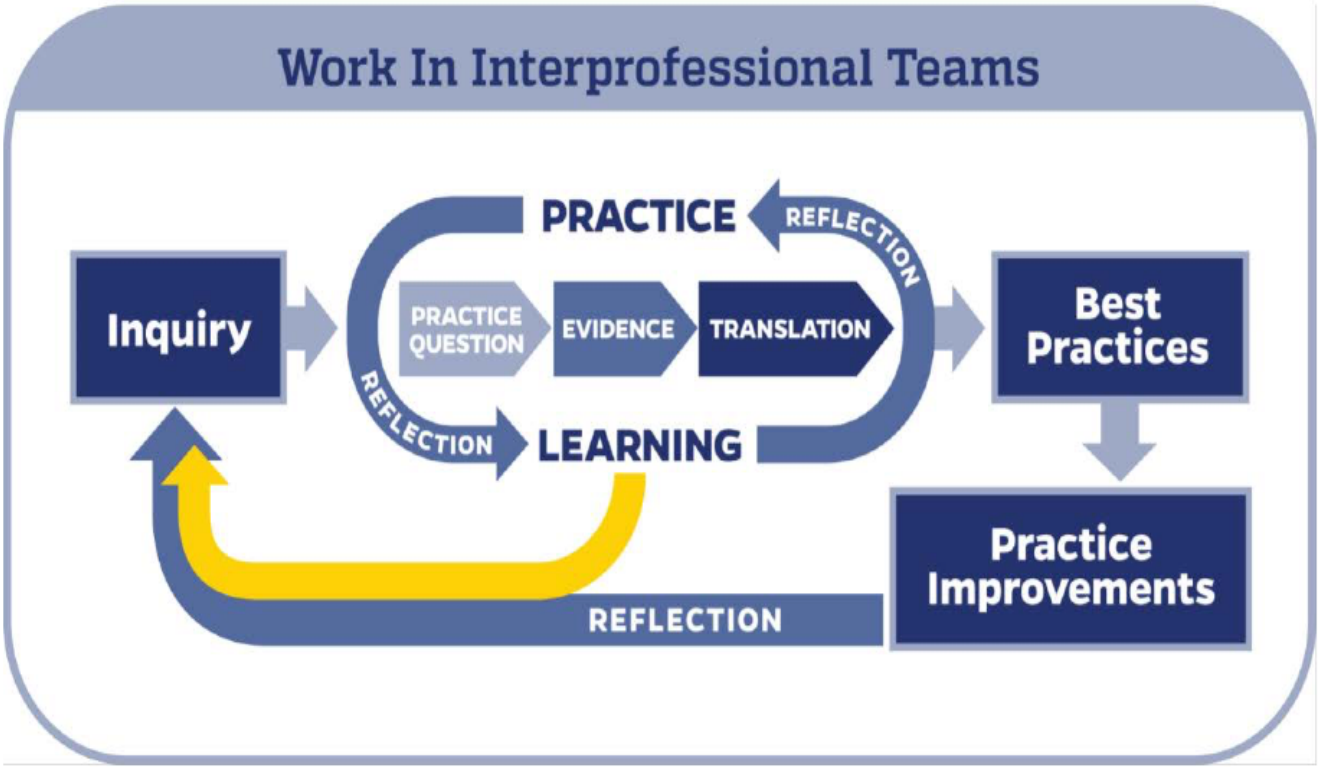
Overview of EBP Model

The model chosen for this EBP process was the John Hopkins Nursing Evidence-Based Practice Model (JHNEBP). The model consists of eighteen steps separated into three phases: practice question, evidence, and translation (Melnyk & Fineout-Overholt, 2015). These three phases are utilized to promote practice improvements and are depicted in Figure 2.1. Phase one, or practice question, includes steps one through five and involves recruiting an interprofessional team (1), developing and refining the EBP question (2), defining the scope of the EBP question and identifying key stakeholders (3), determining the responsibility for project leadership (4), and scheduling team meetings (5). The evidence phase includes steps six through ten and focuses on conducting internal and external searches for evidence (6), appraisal of evidence (7), summarizing evidence (8), synthesizing the strength and quality of evidence (9), and developing recommendations based on the synthesis of that evidence. Steps eleven through eighteen are completed in the last phase, the translation phase, and include determining the appropriateness of the recommendations (11), creating an action plan (12), securing support and resources (13), implementing the action plan (14), evaluating the outcomes (15), reporting the outcomes to the stakeholders (16), identifying the next steps needed (17), and disseminating all of the findings (18) (Melnyk & Fineout-Overholt, 2015).

JHNEBP allows a problem-solving approach to integrate the best available evidence, while considering internal and external influences on practice. It is a dynamic model that focuses on teamwork and care coordination, while working closely with key stakeholders (Dang et al., 2022); all of which are vital considerations for this EBP project. Permission was obtained to use the JHNEBP tool and can be viewed in Appendix D.

Figure 2.1

John Hopkins Nursing Evidence Based Practice Model for Nurses and Healthcare Professionals



Literature Search

Sources Examined for Relevant Evidence

When fulfilling the sixth phase of the JHNEBP model, or the evidence phase, an internal and external search for evidence was conducted (Melnyk & Fineout-Overholt, 2015). An exhaustive literature search was completed after meeting with the Research Services Librarian, at Valparaiso University, to narrow down search terms and select inclusion criteria. The following databases were utilized: Joanna Briggs Institute (JBI), Turning Research into Practice (TRIP), Cumulative Index to Nursing and Allied Health Literature (CINAHL) , MEDLINE with full text via EBSCO, DynaMed, and Cochrane Library. Similar keywords and phrases were employed when

searching across these databases to yield parallel results. Several different keywords were trialed within each database, and with the assistance of the Research Services Librarian, the final keywords and phrases for this project literature review were chosen. The final search extracted words utilized within the PICOT question and included variations of the following keywords and phrases: “cardiovascular disease,” prevent*, “primary care” and dyslipidemia.

Each article was screened for relevance based on the abstract and title and deemed appropriate based on the inclusion and exclusion criteria. Inclusion criteria consisted of a recent publication date range between 2017 and 2022, written or available in the English language, peer-reviewed, inclusive of adults older than 18 years of age, and interventions that focused on the improvement of LDL levels and lifestyle modifications. Exclusion criteria consisted of studies that focused solely on pharmacology interventions, articles that focused solely on specific disease processes that did not include dyslipidemia (such as diabetes, HIV, or gout), articles that focused on pregnant women, or studies that focused on children less than 18 years of age.

In JBI, the initial search began simple and straightforward using the keywords “primary prevention” AND dyslipidemia, with the time limiter for publications published within the previous 5-years. This search yielded zero results. A broadened publication time frame of 10-years was trialed with no changes in the search outcome. Variations of each word were then evaluated, including hyperlipidemia, “high cholesterol,” “elevated cholesterol,” and prevention. A total of four results were found, all of which had a focus on cardiovascular events. With this in mind, the search evolved from dyslipidemia to “cardiovascular disease.” With help from the Research Services Librarian, “primary prevention” was also changed to prevent* in order to accommodate all aspects of prevention within the search. The limiters were adjusted again to a publication date within the last 5-years and 280 results were retrieved. Relevancy was variable in relation to cardiovascular disease, so a title limiter was added to the phrase “cardiovascular disease” and a total of 25 articles were found. After skimming the abstracts for inclusion, three articles were chosen for the review (Mbinji, 2021; Moola, 2020; Porritt, 2021).

Cochrane Library yielded a very similar search, utilizing a publication date within the previous 5-years limiter and using the phrases cardiovascular disease AND prevention. Quotation marks and an asterisk (*) were removed from this search due to Cochrane being a smaller database and requiring a broader search strategy (Melnyk & Fineout-Overholt, 2015). A total of 109 Cochrane reviews were obtained, and relevance to cardiovascular disease was found in the majority of the articles. Exclusion criteria eliminated 96 articles from use, leaving one article that was included in this review (Karmali et al., 2017). The TRIP database was searched using the same keywords as JBI and the limiter of publications authored within the last 5-years, yielding 444 guidelines from the United States of America (USA). To narrow and increase the relevancy to the PICOT question, dyslipidemia was added to the search engine as a keyword. The new search, with the inclusion of the word dyslipidemia, yielded 112 USA guidelines. Fifteen of the guidelines had relevance to preventing cardiovascular disease, however, after removing duplicates and reviewing inclusion and exclusion criteria, two articles were ultimately included within this review (Grundy et al., 2019; USPSTF, 2020).

DynaMed was searched after the TRIP database, following suit with the keywords cardiovascular disease AND dyslipidemia AND prevention. No limiters were utilized in this search considering the nature of the database not permitting a time frame limiter within the search engine. The total results yielded 35 articles, and one clinical practice guideline (CPG) was chosen for review (DynaMed, 2022).

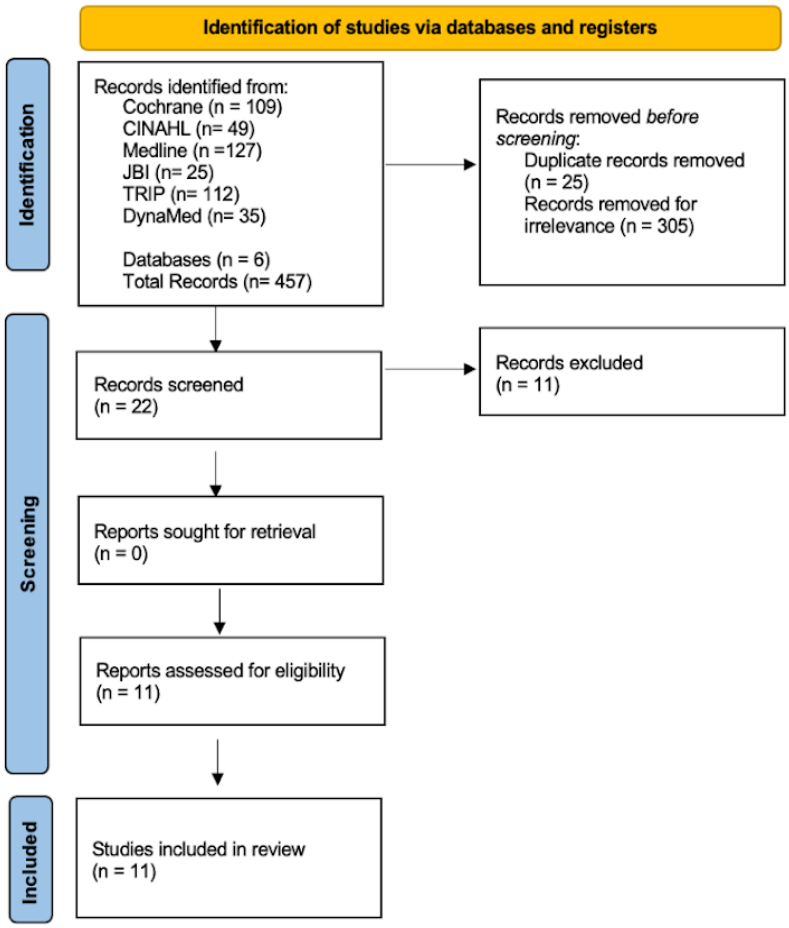
Lastly, the databases of CINAHL and MEDLINE with full text via EBSCO were searched. Given that these databases have a large number of available articles, more keywords and limiters were utilized and variations of each keyword were trialed with varying results. The setting of primary care was added along with the limiters of a publication date within the previous 5-years, peer-reviewed, and published in the English language. The CINAHL database search started with the keywords “cardiovascular disease” AND prevent* OR “primary prevention” OR “early intervention” OR preventative health services" AND “primary care” OR “primary

healthcare” OR “primary health care.” Due to the high number of results, major headings were reviewed and the phrases MM "cardiovascular disease risk factors" OR MM "cardiovascular diseases prevention and control" were added to the search. Over 200 results were obtained with variable relevance to the PICOT question. To improve the relevancy and narrow the search, dyslipidemia OR hyperlipidemia OR hypercholesterolemia were added to the keywords used, and the results narrowed to 49 articles. Of the 49 articles, several duplicates were removed and 27 were excluded from use, leaving two articles for inclusion (Gorina et al., 2018; Ross et al., 2019). In MEDLINE, the same tactic was utilized for searching and the final keywords used were (MM "heart disease risk factors") OR (MM "cardiovascular diseases/PC") OR (MM "cardiovascular diseases") AND "primary care" or "primary health care" or "primary healthcare" AND prevent* or "primary prevention" or "early intervention" or "preventive health services" AND dyslipidemia or hyperlipidemia or hypercholesterolemia. Of the 127 articles that were retrieved, half were relevant to the topic, majority were excluded, and two articles were appropriate for inclusion (Gonzalez-Sanchez et al., 2019; Lidin et al., 2018).

In the end, 457 articles were found, 25 duplicates were eliminated and 305 articles were removed based on what the abstract identified in regards to inclusion and exclusion criteria previously mentioned. In total, 22 articles were screened for relevance, and 11 articles were ultimately chosen for this EBP project literature review (see Figure 2.2).

Figure 2.2

Prisma Flow Chart



Levels of Evidence

The pieces of evidence selected for use in the literature review were leveled according to the Melnyk and Fineout-Overholt (2015) hierarchy of evidence. This hierarchy of evidence is assembled to show research studies that are more likely to provide reliable answers to PICOT questions. As this PICOT question represents an intervention, the most appropriate evidence is that of quantitative research designs, and Melnyk and Fineout-Overholt's (2015) hierarchy accurately portrays more generalizable evidence that applies to broader groups of people with lower risk of bias being at higher levels of evidence. To ensure quality evidence and represent

real-life situations, the majority of pieces included in this review are high levels of evidence, Level I, including four systematic reviews (Gorina et al., 2018; Karmali et al., 2017; Ross et al., 2019; USPSTF, 2020), three evidence summaries (Mbinji, 2021; Moola, 2020; Porritt, 2021), and two CPGs (Grundy et al., 2019; DynaMed, 2022). There is also one Level II randomized controlled trial (RCT) included (Gonzalez-Sanchez et al., 2019) and one Level VI single study (Lidin et al., 2018) (See Table 2.1).

Analysis and Appraisal of Relevant Evidence

Summarizing evidence, or step seven of the JHNEBP model, was completed using two tools for the appraisal of evidence. One tool was retrieved from the JHNEBP model, titled the Research Evidence Appraisal Tool, and was used to appraise nine of the studies (Dang et al., 2022). The other tool, Appraisal of Guidelines for Research and Evaluation (AGREE II), was used to appraise the two CPGs (Brouwers et al., 2013). All of the studies, except one systematic review, were appraised as high-quality evidence. The remaining systematic review was appraised as good quality due to the reliability of under reported results and higher risk of bias reported in some of the studies. However, the systematic review that was rated as good quality was included in the review due to the applicability to the PICOT question (see Table 2.1).

The John Hopkins tool was chosen for appraisal due to the ease of use, continuity of use as the JHNEBP model is being utilized, and the applicability to the studies being appraised. The John Hopkins tool thoroughly assesses the main components of appraisal including validity, reliability, and applicability (Dang et al., 2022). The appraisal tool allowed for a thorough yet efficient review, which was appropriate for this type of extensive literature appraisal. The AGREE II tool was utilized for the CPGs because it was created specifically for appraising this type of evidence while the John Hopkins tool was not. Additionally, the tool was easy to use, thorough, and helpful in determining what criteria was present and missing in regards to a CPG. The CPG appraisal criteria outlined within six domains in the John Hopkins tool includes: scope and purpose, stakeholder involvement, rigor of development, clarity of presentation, applicability, and

editorial independence (Brouwers et al., 2013). Both of these tools were advantageous in identifying quality evidence to include in this review and facilitated the identification of strengths and limitations within each publication. See Appendix E for more information regarding the evidence summary and appraisal.

Table 2.1

Summary of Evidence

Author/yr.	Database(s)	Level of Evidence/Type	Quality/Tool
DynaMed (2022)	DynaMed	I/CPG	High/AGREE II
Gonzalez-Sanchez et al. (2019)	Medline	II/RCT	High/John Hopkins
Gorina et al. (2018)	CINAHL	I/Systematic Review	Good/John Hopkins
Grundy et al. (2019)	TRIP	I/CPG	High/AGREE II
Karmali et al. (2017)	Cochrane	I/Systematic Review	High/John Hopkins
Lidin et al. (2018)	Medline	VI/Single Study	High/John Hopkins
Mbinji (2021)	JBI	I/Evidence Summary	High/John Hopkins
Moola (2020)	JBI	I/Evidence Summary	High/John Hopkins
Porritt (2021)	JBI	I/Evidence Summary	High/John Hopkins
Ross et al. (2019)	CINAHL	I/Systematic Review	High/John Hopkins
USPSTF (2020)	TRIP	I/Systematic Review	High/John Hopkins

Construction of Evidence-based Practice

Synthesis of Critically Appraised Literature

A review of literature was performed to complete steps eight (summarizing evidence) and nine (synthesizing the strength and quality of evidence) of the JHNEBP model. This review aimed to find the best practice for lowering LDL levels, with an emphasis on prevention and management of cardiovascular disease. Since CVD is the leading cause of death around the world, literature was saturated in interventions that help lower the risk of this condition. This specific review excluded any intervention that focused solely on pharmacotherapy and concentrated on those interventions aimed at lifestyle modifications. The following is a synthesized summary of the eleven articles chosen for review and the interventions of interest for the prevention of CVD through the management of dyslipidemia (Appendix E).

Screening for Cardiovascular Disease

In order to adequately prevent or manage a disease, a provider must understand a person's risk of achieving that disease state. In regards to dyslipidemia leading to cardiovascular disease, literature highlights the use of screening techniques to identify at-risk individuals. A physical examination that includes a history and physical assessment, blood pressure screening, waist circumference, body mass index (BMI), serum lipid panel, plasma glucose levels, and renal function should be completed on all patients 20 years and older. This recommendation for 20 years and older should occur every four to six years and then routinely, or annually, starting at age 40 (DynaMed, 2022; Grundy et al., 2019; Porritt, 2021). Literature supports that the above identified laboratory screenings should be collected upon a patient fasting for at least eight to twelve hours (DynaMed, 2022; Grundy et al., 2019). However, ongoing research has led to the notion that a non-fasting lipid panel can and will produce little to no difference in cardiovascular risk assessments ($p < 0.001$) (DynaMed, 2022; Grundy et al., 2019).

Following the physical exam, there is a Grade A recommendation that individuals 20 years and older complete a 10-year ASCVD risk score (DynaMed, 2022; Grundy et al., 2019;

Karmali et al., 2017; Porritt, 2021; USPSTF, 2020). This ASCVD calculation is also used in the determination of disease management and treatment effect (DynaMed, 2022; Gonzalez-Sanchez et al., 2019; Grundy et al., 2019; Karmali et al., 2017; Lidin et al., 2018; Moola, 2020; USPSTF, 2020). A validated tool must be used when determining the ASCVD risk percent (DynaMed, 2022; Gonzalez-Sanchez et al., 2019; Grundy et al., 2019; Karmali et al., 2017; Lidin et al., 2018; Porritt, 2021; USPSTF, 2020). Several risk calculations tools mentioned in the literature, included: Systematic Coronary Risk Evaluation (SCORE) (DynaMed, 2022; Karmali et al., 2017; Porritt, 2021), the Framingham Risk Score (Grundy et al., 2019; Karmali et al., 2017; Lidin et al., 2018; Moola, 2020; Porritt, 2021; USPSTF, 2020), and the American College of Cardiology (ACC)/American Heart Association (AHA) pooled cohort equations (PCE) (DynaMed, 2022; Grundy et al., 2019; Karmali et al., 2017; USPSTF, 2020). This ASCVD risk score should then guide the treatment intervention based on the ACC/AHA algorithm (Grundy et al., 2019). All patients regardless of their risk, however, should attempt lifestyle modifications for the prevention and management of ASCVD through diet composition, weight control, and physical activity (DynaMed, 2022; Gonzalez-Sanchez et al., 2019; Gorina et al., 2018; Grundy et al., 2019; Karmali et al., 2017; Lidin et al., 2018; Mbinji, 2021; Ross et al., 2019; USPSTF, 2020). An ASCVD risk score may also be used by healthcare providers to approach lifestyle modification education (Grundy et al., 2019; Karmali et al., 2017). Karmali et al. (2017) reported two studies that shared improvements in heart healthy diets when providing the ASCVD risk score to patients during their physical examination visits ($p < 0.001$ & $p < 0.01$), and four studies that showed no difference in dietary patterns. On another note, two of the articles showed a decrease in cardiovascular risk when LDLs were decreased (Lidin et al., 2018; Moola, 2020), further supporting an intervention of change.

Lifestyle Modifications

Once an assessment and ASCVD risk is obtained, literature supports lifestyle modifications as an intervention that should be used by each patient regardless of the risk score

(DynaMed, 2022; Lidin et al., 2019). A Grade A recommendation is made for multifaceted interventions that focus on dietary, behavioral, physical, and psychological aspects of health (Mbinji, 2021). Before reviewing specific interventions related to these lifestyle factors, it is important to understand the literature evidence surrounding each of these aspects.

Diet.

Dietary habits largely affect someone's risk for CVD and greatly alters an individual's lipid profile. The literature demonstrates support for several dietary adjustments, including: restricting caloric intake (DynaMed, 2022; Grundy et al., 2019; Ross et al., 2019; USPSTF, 2020), increasing dietary fiber (Ross et al., 2019), increasing fruit and vegetable intake (DynaMed, 2022; Gorina et al., 2018; Grundy et al., 2019; Ross et al., 2019; USPSTF, 2020), lowering salt/sodium intake (DynaMed, 2022; Gorina et al., 2018; USPSTF, 2020), decreasing saturated fat intake (DynaMed, 2022; Ross et al., 2019; USPSTF, 2020), eliminating trans fats (DynaMed, 2022), and consuming whole grains (DynaMed, 2022; Gorina et al., 2018; Grundy et al., 2019; USPSTF, 2020) and low-fat dairy products (DynaMed, 2022; Grundy et al., 2019). The dietary approaches to stop hypertension, or DASH diet, and Mediterranean diets are mentioned in the literature as great approaches to lowering lipid levels (DynaMed, 2022; Mbinji, 2021; Ross et al., 2019; USPSTF, 2020). Although diet can help lower LDL levels on its own, dietary modifications should be used in combination with adjustments in physical activity (Mbinji, 2021).

Physical Activity.

Increased physical activity was supported by several studies to reduce CVD risk, but there was a lack of consistency among the recommendations regarding what physical activity should entail. Specifically, there was a lack of mention on what types of exercise are the best, along with what types of routines or regimens to follow. However, it is apparent that promoting weight loss in general is a key educational aspect of dyslipidemia (Grundy et al., 2019; Mbinji, 2021;USPSTF, 2020), and the advised physical activity should be three to four 30–40-minute

sessions of moderate-to-vigorous physical activities a week, (DynaMed, 2022; Grundy et al., 2019) or 90-180 minutes total per week (USPSTF, 2020). .

Smoking Cessation and Alcohol Consumption.

Accompanying diet and exercise should be education for patients on smoking cessation and appropriate alcohol consumption (Gorina et al., 2018; Lidin et al., 2018; Moola, 2020). Alcohol consumption should be limited to less than three to four drinks a day for men and less than two to three drinks a day for women (DynaMed, 2022). There was a lack of detailed information within the literature with regards to what types of drinks these implied. Furthermore, all patients who smoke should be counseled with smoking cessation (DynaMed, 2022; Gorina et al., 2018; Grundy et al., 2019; Karmali et al., 2017; Lidin et al., 2018; Mbinji, 2021; Moola, 2020; Porritt, 202). But again, there was a lack of distinction on how this counsel should be completed. A further review of these articles was carried out to find the best way a healthcare provider could achieve these recommendations.

Educational Interventions

Media.

In today's society, many individuals are affixed to their mobile phone devices, so it is valid to assume that patient's would use their phones, or other forms of media, to engage in health counseling. Several application programs, or apps, can assist with diet promotion and health tracking. Examples of such health promotion tracking apps discussed within the literature include: EVIDENT II, an app created by Gonzalez-Sanchez et al. (2019) to promote the Mediterranean diet and increase levels of activity during their study, MyPlate (U.S. Department of Health and Human Services, 2021a) which is recommended by the USPSTF (2020), and CardioSmart (ACC, 2013) which is recommended in Grundy et al. (2019). Moola (2020) and USPSTF (2020) recommend utilizing media sources in combination with other interventions, as a Grade B recommendation, in order to lower overall CVD risk and educate patients. Media can be utilized via websites, databases, apps, emails, or health trackers (Moola, 2020; USPSTF, 2020),

but little information was offered on the benefit of each individually. In a RCT by Gonzalez-Sanchez et al. (2019), no significance change in lipid values was noted when utilizing a mobile phone app to educate on diet and track physical activity in addition to an in-person counseling completed by a primary care provider (Gonzalez-Sanchez et al., 2019). Although not statistically different, LDL levels did decrease in both the control and the intervention group, with a higher decrease in the app utilization group (3 month- $p < 0.867$, 12 month- $p < 0.055$). Gorina et al. (2018) presented a study that supported statistical significance in lowering LDL levels with the use of emails ($p < 0.01$) to educate patients on illness management and evaluate treatment adherence.

Individual Counseling and Shared Decision Making.

The USPSTF (2020) considers behavioral counseling, with one-on-one time for motivational interviewing and behavioral change techniques, a Grade B recommendation when an individual has cardiovascular risk factors. Considering elevated LDL levels as a cardiovascular risk factor, behavioral counseling is recommended with an overall statistically significant improvement in LDL levels over 1-2 years (-2.1 mg/dL [95% CI, -4.1 to -0.2]) according to 91 RCTs (USPSTF, 2020). Gorina et al. (2018) contains three studies that address individual meetings, two of which had insignificant LDL changes ($p = 0.61$) compared to usual care, while the other study showed significant results for LDL levels with individualized meetings that addressed self-control and illness management over 12 months ($p < 0.01$).

Individual counseling could be completed by a primary care provider (Gonzalez-Sanchez et al., 2019; Gorina et al., 2018; Grundy et al., 2019; Lidin et al., 2018; Ross et al., 2019; USPSTF, 2020), registered nurse (RN) (Gorina et al., 2018; Lidin et al., 2018; USPSTF, 2020), or dietician/life coach (Ross et al., 2019; USPSTF, 2020). In fact, Ross et al. (2019) conducted a study to determine the difference in LDL levels when education was completed by a physician/nurse versus a dietician, and there was no statistical significance between several counseling sessions with a dietician versus education from a nurse/physician or educational

handouts (Z = 0.61, p = 0.54). It is important to note from this study that LDL levels did improve from both groups over a three to six-month period (Ross et al., 2018) which favors counseling overall. Although there was minimal literature supporting who is superior to conduct the counseling session, the evidence does support multiple contacts for counseling (Gorina et al., 2018; Ross et al., 2019; USPSTF, 2020), with an estimation of six hours of total counseling provided for an individual over 12 months as an average recommendation (USPSTF, 2020).

With regards to individualized counseling, the literature supports shared-decision making between the clinician and the patient (Grundy et al., 2019). Patient values, culture beliefs, and questions/concerns should be incorporated into counseling sessions. The USPSTF (2020) recommends staff training on how to counsel a patient to lower ASCVD risk, in a brief 60–90-minute session, although it is unclear on when, where, and how this training should occur. In addition to training staff, supplemental materials for patients, such as brochures and handouts, are supported by multiple studies within the literature (DynaMed, 2022; Gonzalez-Sanchez et al., 2019; Gorina et al., 2018; Grundy et al., 2019; Karmali et al., 2017; Ross et al., 2019)

Group Counseling and Telephone Consults.

Gorina et al. (2018) reviewed two studies measuring LDLs after completing telephone consults for general disease education, self-control techniques, and illness management over a 12-month period and found an insignificant decrease in LDL levels ($p > 0.05$). When evaluating group sessions, Gorina et al. (2018) reported two studies that had significantly lower LDL levels when utilizing eight group sessions educating on physical activity and diet ($p < 0.01$ & RR 1.82) compared to standard of care with minimal education and follow-up. Lidin et al. (2018) also conducted a study using a structured lifestyle program that encompassed five group sessions focusing on lifestyle habits and behavior changes. Lidin et al. (2018) reported that LDL levels decreased by 10% among the population participating in the group sessions over a one-year timeframe (p = 0.065). Furthermore, the participants in this study had a significant reduction (15%) in their ASCVD risk percent over one year, although this decrease did not prove to be

statistically significant (p = 0.033). Although each intervention independently may show some patient benefit, the literature emphasizes a multifaceted approach to intervention and combining multiple approaches as the most effective means to counsel on lowering LDL and CVD risk (Mbinji, 2021; Moola, 2020; USPSTF, 2020).

Recommendation for Best Practice

Based on the synthesis of literature, the best practice to address the clinical problem of dyslipidemia and decreasing cardiovascular disease risk involves lifestyle modifications through coaching and counseling and the utilization of a multifaceted educational approach. A physical and history including vital signs, BMI, height, weight, serum lipid panel, plasma glucose levels, renal function, and an ASCVD 10 -year risk estimate should be conducted based on literature recommendations. The timing of this assessment should be based on age, risk factors and the ASCVD risk percent, with a standard recommendation of 20- to 40-year-olds assessed every four to six years and 40 and above being screened routinely thereafter. Following the ASCVD risk estimate, a multi-modal approach to individual patient counseling should be conducted, regardless of their risk score. Education for lifestyle modifications to lower or keep their score low should be tailored to the patient's cultural practices, lifestyle habits, and self-management needs. With the insignificant statistical support for one specific educational intervention, the education may involve a multidisciplinary approach with several contact sessions, whether those be an individual or group setting, and should consist of supplemental materials that may include a media platform.

CHAPTER 3

IMPLEMENTATION OF PRACTICE CHANGE

DNP prepared clinicians play a crucial role in the implementation of clinical practice change in healthcare. DNPs are conditioned to recognize a need for change in order to improve patient health outcomes. They are skilled and highly qualified to conduct a literature search for EBP, critically appraise that literature, and decipher the best implementation strategy to put that knowledge into practice. Based on the statistical data and the supporting recommendations within the literature related to elevated LDL levels, the DNP student developed a multimodal intervention involving behavioral counseling on lifestyle modifications to manage hyperlipidemia. This action began the translation phase of the JHNEBP model, and included: determining the appropriateness of the recommendations, creating an action plan, and securing the support and resources to do so.

After multiple conversations and clinical site visits with key stakeholders of the project and organization, an intervention was developed that would assist in decreasing patient LDL levels in the employee-based primary care wellness clinic. This multimodal intervention optimized patient health, while incorporating aspects to aid in the longevity of EBP care within the clinic. The intervention involved behavioral counseling on lifestyle modifications for cholesterol management. Preceding the counseling sessions was a screening process to identify patients who need the counseling, those with LDL levels greater than 100mg/dl, and a review of their history and physical well-being to understand how their elevated LDL levels may affect their overall risk for developing CVD. Aspects related to cholesterol that could affect long-term CVD include blood pressure, weight, drug and alcohol use, certain medications, and comorbidities. The initial patient visit aimed to address these patient characteristics and allow tailored education to specific patient needs. In addition, an ASCVD 10-year risk was calculated

and added to the patient chart to stay consistent with CPGs and to aid in the emphasis placed on the need for lifestyle changes.

Behavioral counseling took place to address EBP diet and physical activity recommendations for lowering LDL levels. Dietary modifications focused on restricting caloric intake, increasing dietary fiber, increasing fruit and vegetable intake, lowering salt/sodium intake, decreasing saturated fat intake, eliminating trans fats, and consuming whole grains and low-fat dairy products. The DASH diet or Mediterranean diet were encouraged as an approach to these dietary changes. An emphasis was placed on self-regulation and self-monitoring through habit tracking, and education was provided on the free of charge lifestyle apps available for meal tracking and daily reminders for healthy habits. Physical activity was addressed, along with weight loss promotion. The NP advised the patient to be physically active three to four times a week for 30–40-minute sessions of moderate-to-vigorous activities. The activities were tailored to the patient's abilities and preferences, emphasizing aerobic exercise like biking, swimming, gardening, and jogging. Handout packets were utilized to assist and reiterate the behavioral counseling provided by the NP. Two additional appointments were made at the end of the initial visit in order to readdress the behavioral counseling for lifestyle modifications, re-enforce the EBP knowledge behind lowering LDL levels with dietary and physical activity changes, and modify any dietary or physical activity habits that are still affecting LDL levels in a negative manner. These sessions lasted approximately 30 minutes, with 20-minutes allocated just for behavioral counseling, and scheduled for five and 10- to 12- weeks after the initial visit. The five-week appointment was conducted via telephone visit with the FNP, while the first and last appointments were a one-on-one, in-person visit with the FNP. The primary outcome of interest was the LDL level before initiating the behavioral counseling and after the third behavioral counseling session, with hopes of a significantly decreased value. Secondary outcomes aimed to evaluate modifications made to the patients diet and physical activity levels utilizing the RAPA and RYP tools pre- and post-intervention. Additionally, the patient's weight, BMI, blood pressure,

medication reconciliation and adherence, comorbidities, lifestyle app utilization, and ASCVD risk score were readdressed, as all could be affected and/or have changed during this 10-to-12-week period.

Setting and Participants

The setting for the EBP project was a small, employee-based primary care office in Northwest Indiana. This clinic serves over 533 patients, averaging 40 patients in a three-day work week in 2022. The clinic is part of a larger direct primary healthcare company servicing employers, and encompasses 11 primary care clinics across Northwest Indiana.

There are five employees running this clinic, and include an AA, patient advocate, RN, CMA, and FNP. All of the staff participated in the project and had specific roles in the implementation process. The clinic staff attended an educational session, in the form of an in-person PowerPoint presentation, led by the DNP student (Appendix A). The PowerPoint provided each staff member with the literature support driving the project, the intervention that was to be implemented, behavioral counseling techniques geared towards improving cholesterol, and up-to-date knowledge on both cholesterol and CVD, including CPGs for management. This presentation lasted approximately one hour on August 17th, 2022, and was delivered to the office as a group in order for the staff to understand the specific roles they each play in the implementation. A patient case scenario was conducted to role play the intervention from start to finish and guarantee full knowledge was obtained from the presentation by all the staff involved.

The population of interest for this project was patients 20 years of age and older who had elevated LDL levels over 100mg/dl within the past six months. The only patients that were ineligible for participation were those under the age of 20, and those who were unwilling to have their blood drawn to assess a lipid panel. There were no restrictions regarding gender, ethnicity, medical conditions, medications, pregnancy, or current health status. An EMR chart audit was completed to identify these individuals, and a physical exam and assessment was scheduled

accordingly. Those voluntarily willing to partake in this lifestyle counseling became an eligible participant during the implementation period.

The DNP student was responsible for reviewing the chart audit provided by the data analytics team and identified the eligible participants through previous LDL levels drawn within the last six months. The DNP student arranged appointments to repeat lipid panels for those with LDL levels greater than two-weeks old and willing to get re-evaluated. Patients with LDL levels within two-weeks of the implementation start date, August 24, 2022, received a phone call from the DNP student and given the option to set an appointment with the NP or continue with their usual care. After the start date, routine screening for patients that present to the clinic for lab tests that included a lipid panel that qualified for the project became the responsibility of the support staff. This included calling to schedule a visit with the NP for any patient with LDL levels over 100 mg/dl.

The NP was responsible for leading the intervention and initiating and continuing the behavioral counseling sessions. The AA was responsible for scheduling the follow-up appointments, along with identifying eligible patient participants. The RN and CMA were also responsible for identifying eligible patients, along with emphasizing the education, documenting vital signs, drawing blood work, and charting patient assessment information. Lastly, the patient advocate had the responsibility to ensure patient follow-up and continued use of the counseling intervention for future appointments.

Pre-Intervention Group Characteristics

For those eligible patients who signed the informed consent to partake in the project, a chart audit was conducted by the DNP student for demographic information and included documented: (a) age, (b) gender, (c) ethnicity, (d) medications, including dose and frequency, (e) medical conditions (f) blood pressure, (g) weight, and (h) BMI (Appendix F). Additional information was added to this data collection, including the RAPA score, RYP score, ASCVD %, LDL level, and a patient self-report of mobile phone lifestyle app usage. This self-report, yes or

no answer, was written on the bottom of the completed RAPA tool during the initial medical assessment by the RN and during the third behavioral counseling visit.

Intervention

Prior to implementation of this project, a substantial amount of time went into the planning of the following intervention. The foundation of this project exhibits an exhaustive literature search for EBP, which supports a multimodal intervention aimed at behavioral counseling for lifestyle modifications on diet and physical activity. While the literature never supported one specific way to complete this counseling, key stakeholders including clinical staff and a registered dietician were consulted and an intervention was developed by the DNP student. As previously mentioned, the clinical staff received a PowerPoint presentation for the intervention review. This educational presentation was completed one week prior to the start of the project on August 24, 2022.

The EBP project involved four essential steps in care: (1) pre-intervention participant identification and scheduling, (2) patient screening and assessment, (3) face-to-face behavioral counseling session, including supplemental materials and an optional media component, and (4) follow-up sessions with the NP provider. Step one was completed by the DNP student and was previously illustrated. Step two involved a team effort. The step began after acknowledgement was made for an elevated LDL level on a patient's lipid panel, and an appointment was set for the patient to see the NP. During this initial visit, the RN collected pertinent medical information and documented the information within the EMR for the FNP to review. A complete medical history review included vital signs, height, weight, smoking and alcohol history, medication reconciliation, family history, and medical history. Based on this documented information, the NP was be able to calculate an ASCVD 10-year risk assessment using the ACC risk estimator app (ACC, 2021). The result was then documented in the EMR and addressed during the counseling session for patient knowledge. Additionally, the RN educated the patient on the lipid panel results and distributed an informed consent for the project (Appendix G). The patient read through the

consent, and if he/she agreed to the terms depicted, they signed the form and were handed the RAPA and RYP tools for completion. Meanwhile, the RN made a copy of the consent form, placed one copy in a folder labeled “project” in a locked filing cabinet in the front desk, and brought a copy back to the patient for their records. The RN then ensured the RAPA and RYP tools were completed to their entirety, obtained a self-report from the patient on their usage of mobile phone lifestyle app (yes or no), wrote the patient answer on the bottom of the RAPA tool, and placed those completed RAPA and RYP forms in the same “project” folder kept in a locked filing cabinet at the front desk. Staff then notified the NP of their completion and acceptance of the behavioral counseling. If the patient did not agree to sign the informed consent, the office standard of care for hyperlipidemia was performed as usual.

Step three involved the FNP providing education and counseling. Education focused on dietary habits and physical activity that assist in lowering LDL levels, and was directed with a patient handout folder. This supplemental material included handouts on cholesterol, dietary recommendations, physical activity recommendations, and lifestyle apps. These handout packets were created by the DNP student and include materials supported by the United States Department of Health and Human Services, AHA, ACC, CDC, and University of Wisconsin Health Preventive Cardiology Program (Appendix C). The FNP reviewed the content within the folder and the appropriate lifestyle changes supporting a decrease in LDL levels, then sent the folder home with the patient for future reference. Following the education, an open dialogue was initiated by the FNP and tailored counseling on how to make lifestyle modifications in congruence with the patient’s daily habits, personal and cultural preferences, and physical abilities was conducted. Three individualized goals were set by the participants, documented in the EMR by the FNP, and readdressed during each follow-up visit. Self-monitoring and self-regulation of these lifestyle changes were addressed at the initial visit through utilization of a lifestyle app. The FNP mentioned and educated patients on several different lifestyle apps available free of charge, however, it was at the discretion of the individual if they wanted to utilize this component during

their modifications. If an app was not to be utilized, the patient was encouraged by the FNP to use a journaling technique to monitor changes. Whether the patient utilized an app or a journaling technique, they were guided to self-monitor their lifestyle habits on a daily basis in order to see their progression and areas for improvement. At the end of the counseling session any patient questions or concerns were answered, and the patient was directed to the front desk to make their follow-up appointments. The NP utilized a template within the EMR, created by the DNP student, to chart the counseling session, including the goals discussed with the patient (Appendix H).

It is important to note that a major component in caring for individuals with hyperlipidemia includes pharmacotherapy. Although this project did not focus on pharmacology, the NP conducted care based on the CPGs and ACC/AHA recommendations for statin drug therapy utilization (Grundy et al., 2019). The use of medications did not exclude anyone from this project, nor did this project stop anyone from receiving additional treatment. Behavioral counseling can and should be used in conjunction with any treatment modalities chosen for those with elevated LDL levels greater than 100 mg/dl.

The final step in this intervention, step four, was ensuring these patients received follow-up sessions of behavioral counseling. The AA attempted to make both follow-up appointments with the patient prior to them leaving the office at their initial visit. One follow-up appointment was scheduled for five weeks and entered as a 30-minute telephone consult with the NP. The second appointment was scheduled for 10- to 12-weeks and entered as a 45-minute in-person consult with the NP. The AA labeled the future appointments as *behavioral counseling* (five-week) or *behavioral counseling with lipid panel* (10- to 12-weeks). If the appointments could not be scheduled at that time, a reminder “appointment tickler” was placed in the patient chart for the patient advocate to follow-up on scheduling. Behavioral counseling was conducted during both of the follow-up sessions, along with addressing the patient’s goals, questions, and concerns. The CMA drew a lipid panel after the 10- to 12- week counseling session had concluded, in addition

to having the patient fill out the RYP and RAPA tools. Once the tools were filled out, the CMA placed them in a folder labeled “project” located in a locked cabinet in the front office. Additional follow-up sessions were made at the discretion of the NP and office staff, but for the purposes of this project, observation from the DNP student ended after the conclusion of all 10- to 12-week appointments.

Comparison

During a chart review by the DNP student, and from conversations with the NP and dietician, it was clear there is minimal education done in regards to cholesterol and CVD prior to project implementation. Per a conversation with the NP, education focused only on diet and the reduction of saturated fats and fast-food consumption (R. Zimmerman, personal communication, May 20, 2022). A conversation was most often conducted about hyperlipidemia drug therapy options, and a shared-decision making technique was used to decide the next steps in treatment. Regardless of what route the patient chose, pharmacotherapy, lifestyle modifications, or both, the NP recommended a repeat lipid panel in six months.

This NP voiced his opinion on a need for education on lifestyle modifications, and given his background in emergency medicine, reported a lack of emphasis on education in his practice in general. Moreover, the NP recognized the need to address ASCVD risk scores in the EMR and clinical practice, but had yet to do so (R. Zimmerman, personal communication, May 20, 2022). After this opinion was shared and a review of literature and clinical data statistics were conducted, there was an identified area of practice improvement among patients with hyperlipidemia.

Outcomes

The primary outcome of interest in this EBP project was LDL levels. Patients receive labs for free at this clinic so an annual lipid level, along with repeat testing, is free of charge and is completed on most patients. An EMR audit for elevated LDL levels was completed and those with levels greater than 100 mg/dl within the past six months were contacted for follow-up for an

in-person assessment with the provider. If that lipid level was greater than 2 weeks old, a new lipid panel was drawn and data was based on the new LDL level. After the educational intervention had been initiated and followed over a 10- to 12- week timeframe, a repeat lipid panel was drawn and compared to the initial LDL level.

Secondary outcomes of interest were modifications in lifestyle habits: diet and physical activity. These were measured from the scores of the RAPA tool and the RYP tool before the intervention implementation and after the two follow-up sessions. Physical activity was measured using the RAPA tool due to its ease of use and ability to easily understand its content (University of Washington Health Promotion Research Center, 2006). The RYP tool was used to measure dietary habits also due to its ease of use and ability to easily understand its content (U.S. Department of Agriculture, 2016). Both of these tools are available free for student utilization, and have been deemed valid and reliable tools (Appendix B). Additional outcomes were monitored pre-intervention and post-intervention, including: weight, BMI, blood pressure, ASCVD risk score, and lifestyle app utilization.

Patient scores and data were managed in the form of paper recording, and kept in a folder in the clinic office. Data collection from participants was kept on site, in a locked filing cabinet, until needed for analysis. The differences in pre- and post- intervention LDL levels, RAPA and RYP scores, weight, BMI, blood pressure, and ASCVD risk score were analyzed using a paired *t* -test. An odds ratio was also calculated to evaluate the odds of LDL levels changing for those that were started on statin therapy at the beginning of the intervention versus those that did not take a statin.

Time

Implementation of this project began August 24, 2022, coinciding with the beginning of Valparaiso University's fall semester. Prior to this implementation phase, the DNP student developed the project over 150 hours, and prepared patient educational handout folders and a staff PowerPoint. The educational PowerPoint presentation for the staff took place on August 17,

2022, and patient supplemental materials were printed prior to this meeting and stored in the patient room for use during the implementation period. The timeline, once patients were assessed and a physical exam was completed, was 10-to 12- weeks from that first counseling session, so this will vary depending on when patients were seen in the office. The implementation for project data ceased prior to the spring 2023 semester at Valparaiso University, meaning the last initial provider counseling session was conducted no later than October 28, 2022 (Appendix I).

Protection of Human Subjects

A main priority during this project was to protect the human subjects. The DNP student completed research ethics training through the Collaborative Institutional Training Initiative (CITI) program on April 15, 2022 (Appendix J). An application for Institutional Review Board (IRB) approval was submitted through the IRB board at Valparaiso University on July 12, 2022, with a response of “IRB approval not required.” Details of the project were given to key stakeholders involved in the clinic operations, and a telephone meeting was completed July 15, 2022 with the chief medical officer (CMO) of the company, to confirm approval of the project. The CMO deemed the project exempt from formal IRB review, and confirmed approval for implementation of the EBP project. All of these steps were completed in the development phase, prior to the implementation and evaluation of the EBP project to ensure ethical conduct and patient safety.

Before implementing the project, each eligible patient was given an informed consent to sign. Within this document was the explained risks and benefits associated with participation in the project. The benefits involved lowering their cholesterol and overall risk for CVD. The risks were minimal as this was a self-management approach to modifying habits and should only have been performed at a level that was tolerable for the patient. By signing the consent, the patient was aware that their identifiers would be kept anonymous and any questions could be directed towards DNP student. The DNP student’s name, phone number, and email were provided and written within the document (Appendix G).

During the implementation phase, patient identifiers were kept anonymous to anyone not involved in their direct patient care and during the evaluation process, using a double coding system known only to the DNP student. This information was kept in secure file cabinets, and on the DNP student's laptop secured by a password only known by the DNP student herself. Upon completion of the project, any patient identifying information retained on paper was shredded at the clinic site.

The implementation of this EBP project aimed to change current practice within the clinic to EBP and ultimately improve patient outcomes. The multimodal intervention, which consisted of staff education, patient education and counseling, patient handouts, media use, and patient follow-up, was used with an aim to decrease LDL levels and ASCVD risk for all patients involved.

CHAPTER 4

FINDINGS

This behavioral counseling project was developed to provide an evidence-based approach, tailored to individual patient needs, for modifying lifestyle habits in regards to cholesterol management. To complete step 14 of the JHNEBP model, evaluating the outcomes, the following data analyses detail project outcomes and the effects a behavioral counseling intervention has on patient health outcomes. Demographic information for the participants and key project findings are presented and compare pre- and post- intervention statistics.

Participants

Participants were recruited from August 24th, 2022 to October 28th, 2022 at a small direct primary care clinic in northwest Indiana. Demographic information that was collected from each participant included, age, gender, race/ethnicity, statin usage, mobile phone app usage, and comorbidities, specifically hypertension (HTN) and diabetes (DM) (Table 4.1). Twenty-four participants were recruited, 14 of which were female (58.3%) and 10 were male (41.7%). The mean age of the 24 participants was 48.96 years (*SD* = 10.67), ranging from 23 to 68 years. All of the participants (100%) were documented as being white. Five participants (20.8%) were started on a statin medication at the initial counseling session per EBP guidelines adhered to at the project setting, and four participants (16.7%) were already utilizing a mobile phone app for tracking lifestyle habits. Comorbidities that were documented included five participants (20.8%) with HTN and six participants (25%) with DM.

Fourteen of the 24 participants (58.3%) completed the intervention, including eight females (57.1%) and six males (42.9%) (Table 4.1). The mean age was 51.71 (*SD* = 10.28), ranging from 35 to 68 years. Four of these participants were maintained on a statin medication during the intervention (28.6%). Four participants (28.6%) reported they started utilizing an app to monitor lifestyle habits during the intervention, which increased the utilization rate overall as

the four participants that started the intervention already utilizing a lifestyle app were among the 10 participants who did not finish the project. Also of note, among the final participants, there were three (21.4%) with HTN and two (14.3%) with DM comorbidities.

A Pearson correlation coefficient was calculated examining the relationship between the participants gender and age. A moderate correlation that was not significant was found ($r(12) = .419$, $p > .136$). This supports the notion that age and gender are not related factors in participants that qualified and finished this intervention.

Table 4.1

Descriptive Demographic Data for Baseline and 10- to 12-week Participants

Data Type	Baseline	Week 10-12
Number of Participants	24	14
Attrition Rate		41.7%
Age (years)		
Mean (*SD*)	48.96 (*10.67)*	51.71 (*10.28)*
Range	23-68	35-68
Gender		
Female	14 (58.3%)	8 (57.1%)
Male	10 (41.7%)	6 (42.9%)
Race/Ethnicity		
White	24 (100%)	14 (100%)
HTN	5 (20.8%)	3 (21.4%)
DM	6 (25%)	2 (14.3%)
Statin Usage	5 (20.8%)	4 (28.6%)
Mobile Phone App Usage	4 (16.7%)	4 (28.6%)

Note. SD = Standard Deviation; HTN = Hypertension; DM = Diabetes; App = Application

Changes in Outcomes

The PICOT question for this project was: In adults aged 20 years or older in the primary care setting who have elevated LDL levels (P), does the implementation of behavioral counseling on lifestyle modifications (I) compared to current practice (C) decrease LDL levels (O) over a 10- to 12- week period (T)? Therefore, the primary outcome of focus was LDL levels. The secondary outcomes included weight, BMI, blood pressure, ASCVD risk score, RAPA and RYP scores. The pre- and post-intervention data for these outcomes were analyzed utilizing a paired *t*-test, with a statistical significance level set to $p < .05$.

Statistical Testing and Significance

Statistical Package for Social Sciences (SPSS) 25 was the program used to complete data analysis. Because the project was a within-group design and presents scale data, the primary and secondary outcomes were analyzed using a paired *t*-test. In addition, an odds ratio was assessed to determine the odds of LDL levels decreasing with an accompanied statin usage.

Findings

Table 4.2 presents the data collected from each participant at baseline and at their final visit. If the participant was placed on a statin medication during the project, it was noted in the last column. There were four participants that started on statin therapy during their initial visit, and completed the entirety of the project on the same medication and dose. At the final visit, there were no changes made to those statin doses or additional medications added, and all four participants were instructed to continue taking their statin as prescribed per the FNP recommendations. Also of note, no additional participants were started on statin therapy during their final behavioral counseling session with the FNP. Table 4.3 depicts statistical outcomes utilizing a paired *t*-test to compare the means of pre-intervention data to post-intervention data and determine the relationship between those values.

Table 4.2

Participant Data for Primary Outcome

Participant	Baseline LDL	Week 10-12 LDL	Statin Usage
1	161	170	No
2	223	84	Yes
3	151	153	No
4	112	113	No
5	122	130	No
6	126	105	No
7	124	97	Yes
8	121	106	No
9	147	139	No
10	142	139	No
11	156	94	Yes
12	109	111	No
13	103	90	No
14	126	71	Yes

Note. LDL = Low Density Lipoprotein

Primary Outcome

LDL Levels. The overall mean baseline for LDL levels of all 24 participants was 142.54 mg/dL (*SD* = 28.42) and ranged from 103 to 223 mg/dL. For participants who completed the intervention, the mean baseline for LDL level was 137.36 mg/dL (*SD* = 30.52) and ranged from 103 to 223 mg/dL. At the conclusion of 10- to 12 weeks, the mean LDL level was 114.43 mg/dL (*SD* = 28.19) and ranged from 71 to 170 mg/dL. The data analysis of the 14 participants who completed the intervention represented a nonsignificant decrease in LDL levels between the

baseline and follow-up visit ($t(13) = 2.154$, $p = .051$). Despite the lack of statistical significance, nine of the 14 participants who completed the project experienced a decrease in their LDL level. Although five patients did not lower their levels, they experienced other positive results that are seen within the secondary outcomes.

Statin Usage. To address the fact that four of the 14 (28.6%) participants completed this intervention while on statin medication, an odds ratio (OR) was conducted. It was found that the odds of a participant decreasing their LDL level when taking a statin were two times higher than those who were not on statin therapy (OR 2.00, 95% CI:1.08-3.72). Furthermore, the odds that the follow-up 10- to 12- week LDL level was under 100 mg/dL was 10 times higher if the patient was on a statin versus no drug therapy (OR 10.00, 95% CI:1.56-64.2).

Secondary Outcome

ASCVD Risk Score. The overall mean baseline for ASCVD risk scores for 20 of the 24 participants was 5.53% (*SD* = 4.68) and ranged from .60% to 18.60%. Four participants did not have an ASCVD calculation, as the ACC (2021) phone application would not calculate a risk percentage for individuals younger the 40 years of age. Twelve of the 14 participants who completed the intervention received a calculation, and the mean baseline for ASCVD scores of those individuals was 5.89% (*SD* = 5.13) and ranged from .60% to 18.60%. At the conclusion of 10- to 12- weeks, the mean ASCVD score was 4.66% (*SD* = 5.05) and ranged from .20% to 18.40%. The data analysis of the 12 participants who completed the intervention demonstrated a statistically significance decrease in ASCVD risk between the baseline and follow-up visit ($t(11) = 3.960$, $p = .002$).

Weight. The overall mean baseline for weight among all 24 participants was 216.46 lbs. (*SD* = 68.25) and ranged from 107 to 448 lbs. For participants who completed the intervention, the mean baseline for weight was 223.59 lbs.(*SD* = 80.36) and ranged from 107 to 448 lbs. At the conclusion of 10- to 12- weeks, the mean weight was 220.86 lbs. (*SD* = 81.01) and ranged from 106 to 451 lbs. The data analysis of the 14 participants who completed the intervention

demonstrated a statistically significance reduction in weight between the baseline and follow-up visit ($t(13) = 2.356$, $p = .035$).

BMI. The overall mean baseline for BMI of all 24 participants was 32.79 (*SD* = 10.18) and ranged from 19 to 70.2. For participants who completed the intervention, the mean baseline for BMI was 33.86 (*SD* = 12.71) and ranged from 19 to 70.2. At the conclusion of 10- to 12 weeks, the mean BMI was 33.41 (*SD* = 12.77) and ranged from 18.8 to 70.6. The data analysis of the 14 participants who completed the intervention demonstrated a statistically significance decrease in BMI between the baseline and follow-up visit ($t(13) = 2.511$, $p = .026$).

Systolic Blood Pressure (SBP). The overall mean baseline for SBP of all 24 participants was 133.17 mmHg (*SD* = 16.39) and ranged from 90 to 160 mmHg. For participants who completed the intervention, the mean baseline for SBP was 132.29 (*SD* = 15.23) and ranged from 90 to 150 mmHg. At the conclusion of 10- to 12- weeks, the mean SBP was 124.29 mmHg (*SD* = 11.50) and ranged from 104 to 142 mmHg. The data analysis of the 14 participants who completed the intervention demonstrated a statistically significance decrease in SBP between the baseline and follow-up visit ($t(13) = 2.538$, $p = .025$).

Diastolic Blood Pressure (DBP). The overall mean baseline for DBP of all 24 participants was 82.83 mmHg (*SD* = 8.75) and ranged from 64 to 100 mmHg. For participants who completed the intervention, the mean baseline for DBP was 80.00 (*SD* = 7.23) and ranged from 64 to 92 mmHg. At the conclusion of 10- to 12 weeks, the mean DBP was 78.43 mmHg (*SD* = 4.45) and ranged from 66 to 84 mmHg. The data analysis of the 14 participants who completed the intervention represents a nonsignificant decrease in DBP between the baseline and follow-up visit ($t(13) = 1.000$, $p = .336$).

RYP. The overall mean baseline for RYP scores of all 24 participants was 52.63 (*SD* = 9.49) and ranged from 22 to 75. For participants who completed the intervention, the mean baseline for RYP scores was 54.50 (*SD* = 7.59) and ranged from 46 to 75. At the conclusion of 10- to 12 weeks, the mean RYP score was 63.07 (*SD* = 8.84) and ranged from 47 to 79. The

data analysis of the 14 participants who completed the intervention demonstrated a statistically significance increase in RYP scores between the baseline and follow-up visit ($t(13) = -4.059$, $p = .001$). This outcome differs from the previous outcomes as the scores increased instead of decreased. Higher values on a RYP tool identify with healthier eating habits, thus an increase in scores shows a positive outcome for the participants. To ensure reliability of this tool, a Pearson correlation coefficient was performed to compare the results found. A moderate correlation with significance was determined, indicating reliability ($r(12) = .546$, $p = .043$).

RAPA. The overall mean baseline for RAPA scores of all 24 participants was 4.83 ($SD = 2.41$) and ranged from 1 to 9. For participants who completed the intervention, the mean baseline for RAPA scores was 4.21 ($SD = 2.26$) and ranged from 1 to 9. At the conclusion of 10- to 12 weeks, the mean RAPA score was 5.93 ($SD = 2.40$) and ranged from 2 to 10. The data analysis of the 14 participants who completed the intervention demonstrated a statistically significance increase in RAPA scores between the baseline and follow-up visit ($t(13) = -3.453$, $p = .004$). This tool is similar to that of the RYP, as an increased score means better outcomes. Higher scores correlate with increase in physical activity, so this supports a statistically significant positive outcome for the participants. To ensure reliability of this tool, a Pearson correlation coefficient was performed to compare the results found. A moderate correlation with significance was determined, indicating reliability ($r(12) = .684$, $p = .007$).

Table 4.3

Outcomes: Pre- and Post- Intervention with Paired t-test

Data Type	Baseline Mean (*SD)* n=14	Week 10-12 Mean (*SD*) n=14	Paired *t*-test and Significance level
LDL Level (mg/dL)	137.36 (*30.52*)	114.43 (*28.19*)	*t*(13) = 2.154, *p* = .051
ASCVD Score (%)	5.89 (*5.13*)	4.92 (*5.05*)	*t*(11) = 3.960, *p* = .002*
Weight (lbs.)	223.59 (*80.36*)	220.86 (*81.01*)	*t*(13) = 2.356, *p* = .035*
BMI	33.86 (*12.71*)	33.41 (*12.77*)	*t*(13) = 2.511, *p* = .026*
Systolic BP (mmHg)	132.29 (*15.23*)	124.29 (*11.50*)	*t*(13) = 2.538, *p* = .025*
Diastolic BP (mmHg)	80.00 (*7.23*)	78.43 (*4.45*)	*t*(13) = 1.00, *p* = .336
RYP	54.50 (*7.59*)	63.07 (*8.84*)	*t*(13) = -4.059, *p* = .001*
RAPA	4.21 (*2.26*)	5.93 (*2.40*)	*t*(13) = -3.453, *p* = .004*

Note. SD = Standard deviation; LDL = Low density lipoprotein; ASCVD = Atherosclerotic cardiovascular disease; BMI = Body mass index; BP = Blood pressure; RYP = Rate your plate; RAPA = Rapid assessment of physical activity.

For ASCVD scores, n=12. The ASCVD risk estimator plus mobile phone app (ACC, 2021) did not allow for calculations for anyone less than 40 years of age, which eliminated the calculation of two participants ASCVD risk scores and changed the degrees of freedom to 11.

***** Statistical significance $p < .05$.

CHAPTER 5

DISCUSSION

The goal of this project was to determine if the implementation of a multimodal behavioral counseling intervention, including educational handouts, goal setting, media tools, discussion of ASCVD risk score calculations, and frequent follow-up visits would improve LDL levels in patients with high cholesterol. The intervention was created by the DNP student, but implemented by the clinic staff with oversight and guidance of the DNP student. Patient tailored interventions that address CVD and improving patient long-term risk for developing CVD are needed in family practice settings to lower our country's mortality rates and improve patient outcomes. DNP prepared APRNs have a unique opportunity to create projects supporting EBP, and this project's outcomes show the need to continue doing so. The JHNEBP model was used as a guide to implement this project and the remainder of the steps will be discussed in this chapter, including: (15) reporting the outcomes to stakeholders, (16) identifying the next steps needed, and (17) dissemination of all the findings .

Explanation of Findings

An exhaustive literature review preceding this project supported a behavioral counseling technique in the primary prevention of CVD in those who have elevated cholesterol, specifically LDL levels. A multimodal approach was supported to address the need for increased physical activity levels and healthy dietary choices tailored to individual patient needs. An additional literature search was conducted post-intervention to ensure no changes to the recommendations were made during the implementation period, and none were identified. Thus, the following outcomes were in line with EBP and support the recommendations for current practice utilizing behavioral counseling.

Primary Outcome

CVD includes a broad array of concerns to focus on when trying to improve patient outcomes. Grundy et al. (2019) outlined an important relationship between LDL levels and ASCVD risk, stating that populations with the lowest LDL levels had the lowest rates of ASCVD. Furthermore, the individuals with the lowest LDL carried the lowest risk of ASCVD (Grundy et al. 2019). The primary outcome of interest for this project became LDL levels given the data that supports decreasing that number value. Although the overall comparison between pre- and post-intervention LDL levels was statistically insignificant (p = .051), a decrease in the overall mean LDL level by 22.93 mg/dL does still support the implementation of behavioral counseling. This insignificance may have been due to the amount of attrition, small sample size, and/or timing of the implementation period stretching over two holidays. Thanksgiving and Christmas tend to be holidays for the over-indulgence of unhealthy and fat laden foods, and given the verbal feedback from participants, it was hard to make healthy dietary choices during this time. It could also be noted that familial hyperlipidemia was not taken into account within this project, which could affect a participants ability to lower their LDL levels. Additionally, this project was monitored over a very short duration in time. Evidence supports frequent follow-ups, specifically 12 contacts with approximately six hours of counseling over a 12-month period (USPSTF, 2020). Due to the timeline constraints for implementing this specific project, it could to be inferred that these LDL levels would continue to trend downwards into a statistically significant change if the project were continued for several more months.

Secondary Outcomes

ASCVD Risk Score

Clinical practice guideline recommendations encourage providers to calculate a 10-year ASCVD risk score on individuals 20 years of age and older (DynaMed, 2022; Grundy et al., 2019; Karmali et al., 2017; Porritt, 2021; USPSTF, 2020), and use this calculation in the education and counseling for lowering cholesterol and improving lifestyle habits (Grundy et al.,

2019). Statistically significant results ($p < .05$) were found with the ASCVD risk scores calculated during the project, with an approximately 1% decrease in mean scores pre- and post-intervention. This ASCVD risk was calculated utilizing a PCE from the ACC app calculator (2021) for 12 of the 14 total participants. Following the selection of this ACC app calculator as the risk score modality for this project, it came to the attention of the FNP that this particular calculator would not calculate a risk score for anyone under the age of 40, even though it clearly advertises an age range of 20-79. Thus, two of the participants did not receive an ASCVD risk score, omitting that education from their counseling session. To avoid additional bias with the project data, the same calculator was utilized for the remainder of participants, and the two participants who were younger than 40 years of age were omitted from the analysis of findings related to ASCVD risk scores.

Literature did not elect a specific tool to utilize in these calculations, however there was mention that a validated tool for PCE must be used (DynaMed, 2022; Gonzalez-Sanchez et al., 2019; Grundy et al., 2019; Karmali et al., 2017; Lidin et al., 2018; Porritt, 2021; USPSTF, 2020). The two calculators that were accessible for use were the ACC/AHA PCE (DynaMed, 2022; Grundy et al., 2019; Karmali et al., 2017; USPSTF, 2020) and the Framingham Risk Score (Grundy et al., 2019; Karmali et al., 2017; Lidin et al., 2018; Moola, 2020; Porritt, 2021; USPSTF, 2020). Pre-intervention investigation revealed the PCE ACC app (2021) was for use in patients ages 20-79 years and the Framingham Score was limited to ages 30 and above, explaining the choice for the project. Reviewing data post-intervention, it is clear that future projects would need to keep this range in mind for the chosen sample of participants.

Weight and BMI

The weight of the participants decreased an average of 2.73 lbs. over 10- to 12- weeks, with statistical significance ($p < .05$). Similarly, BMI followed suit with a statistically significant decrease, although the average mean of scores did stay in an obese range (> 33). The BMI mean scores did not have a large change over the project timeline (0.45), but a consideration

could be made for the range of weight measurements present among the participants. Weight ranged between 107 - 448 lbs. at baseline, to 106 - 451 lbs. after 10- to 12-weeks. BMI ranged from 19 - 70.20 at baseline, to 18.8- 70.6 after 10- to 12- weeks. The outliers skew the weight and BMI mean average of scores, but account of this is taken when running a paired *t*-test, making the significance still relevant. Behavioral counseling to improve lifestyle eating and exercise habits positively impacted weight reduction.

Blood Pressure

There was a difference in significance between systolic and diastolic blood pressures, but both mean scores experienced a decrease in value. Systolic blood pressure decreased a statistically significant amount ($p < .05$), by an average of 8 mmHg over 10-12 weeks. This data strongly supports the use of behavioral counseling, as hypertension is another major risk factor for CVD (CDC, 2022c). Lowering systolic blood pressure created means to lower ASCVD risk for those who did not necessarily lower their LDL during the project. Diastolic values were insignificantly decreased, with an average approximate reduction of 2 mmHg over the intervention period ($p = .336$). While this reduction in diastolic blood pressure may not be statistically significant, it is important to note the average reading decreased from a stage 1 hypertensive range (80 mmHg) to a normal range (78.43 mmHg). Thus, with both blood pressure readings (systolic and diastolic), patient health outcomes were improved through provider behavioral counseling.

RYP and RAPA

The RYP and RAPA tools yielded statistically significant increases ($p < .05$) from pre- to post-intervention scores, indicating a positive change in patient behaviors. The RYP tool was utilized to assess the eating habits of participants and identify important areas of focus in regards to counseling on specific dietary changes. The RYP tool is scored in three categories: there are many ways you can make eating habits healthier (27-45), there are some ways you can make your eating habits healthier (46-63), and you are making healthy choices (64-81). Mean scores

pre-intervention (54.50) increased to post-intervention (63.07) by 8.57 points (p = 001). In review of these results, majority of the participants were making healthier dietary choices and self-reporting improvements in their dietary habits.

The RAPA tool was utilized to assess self-reported physical activity patterns and to what extent each individual partakes. The RAPA tool is measured from 1-9, one being a sedentary lifestyle and nine being vigorous physical activity multiple times a week with strength and flexibility training. Mean scores pre-intervention (4.21) increased to post-intervention (5.93) by 1.72 (p = .004). Although the increase in RAPA scores does not specify the type of physical activity, it does support an overall improvement in the time participants are putting into physical activity each week. The increase in scores on both RYP and RAPA tools coincides with better eating habits and an increase in physical activities over this 10-to 12- week period, suggesting the behavioral counseling does positively impact lifestyle habits. These two outcomes were the only subjective measures within this project, and allowed patients the opportunity to defend their efforts even if their other outcomes did not support their habit changes.

Strengths and Limitations of the DNP Project

Strengths

Several strengths were evident within this EBP project. First, a strong basis of evidence-based literature was found and reviewed by the DNP project coordinator and several faculty members at Valparaiso University. Eleven high level pieces of evidence were utilized to develop this project, and no changes to the EBP recommendations within that literature were found over the course of the project implementation period.

Key stakeholders of the project, including the clinical staff, the FNP, the clinic manager, and the company CMO, were all involved with and provided great asset to the development and implementation of the project. Each person became a valuable piece to the intervention and cared for the success of the participants throughout the 12-week span. Specifically, the FNP who had already developed trusting relationships with the participants, allowing them the comfort to

share their current and previous struggles with making healthy lifestyle changes. After completing a chart review of the eligible participants, it is also important to address the AA, CMA, and RN efforts for ensuring no patients were missed during the recruitment period. Documentation was placed in the chart on why certain patients were not enrolled in the project, proving that all eligible participants were educated with the consent form and that the office staff followed the project protocol. The CMO and office manager did check in with the DNP student periodically as well to ensure no other assistance was needed during the implementation period.

Another key aspect for the success of this project was a grant received from the Sigma Theta Tau Honor Society- Zeta Epsilon chapter. During the implementation phase, the DNP student applied for and received an EBP grant for producing more educational handout folders for distribution of this EBP information, and ultimately create more sustainability for the small clinic to keep up with the printing of tools and patient resources. This grant allowed for 100 additional handout packets to be produced and left for office use once the project had ceased. Additionally, some of that money was used for the creation of a presentation poster to disseminate the statistically significant findings supported from this project. Strength can also be seen by the reproducibility of this project and implementation in other clinics. Counseling is tailored to each individual and their lifestyle needs and preferences, making the appointments easy to replicate if timing allows for multiple patient follow ups. This brings up another strength; the direct primary care environment is a patient-centered model and allows for longer appointment times. This clinical site supports a project that relies on more contact time with patients, and also made any lab work free to the participants, which provides an ease to the implementation.

The USPSTF (2020) also support the idea that behavioral counseling has very minimal risk to the participants, and the likelihood of having adverse effects are rare. The benefits of this project far outweighed the risk to participants, thus favoring the continued use in practice. Arguably the biggest strength of this project was the significant benefits each participant

experienced. All 14 participants who completed the project experienced positive health outcomes. This means the behavioral counseling recommendations for patients with elevated cholesterol are supported by this project.

Limitations

Despite the great strengths within this project, there were some limitations noted as well. As previously mentioned, the ASCVD risk score that was used in the counseling sessions for education was not able to be completed for all participants. The ACC app calculator (2021) only included use for patients 40-years of age and older, making it impossible to obtain a score for all the participants. To avoid information bias, this data was omitted from the total mean for ASCVD score calculations, changing the number of participants to 12. While this data analysis was changed to prevent errors, it is unknown how the omission of that information affected the behavioral counseling sessions of the two younger participants compared to those who knew their ASCVD risk score. It is also unknown how the lack of assessing familial history and familial hyperlipidemia could have affected the results of this project, thus the results of the ASCVD risk score.

Another limitation is the timing of this EBP project. The implementation period fell over two major US holidays (Thanksgiving and Christmas), which affects patient ability to adhere to healthy lifestyle choices. Traditionally, these holidays are a time for gathering and celebration with a great deal of temptation when it comes to unhealthy dietary choices. If acted on, these temptations could have affected the results, but also the willingness for participation, affecting the sample size and attrition rates within the project timetable. Along with the interruptions during the implementation period, it is also of note that the sample could have been larger with a longer time for recruitment. Participants were recruited for just over two months' time, which limits the number of annual visits seen within the office. Direct primary care is known for longer appointment times, so less patients are seen within a given day and this specific office was only open three days a week making it harder to recruit every patient that met the project criteria.

Although the small sample was relatively homogenous, a larger sample could have allowed for more transformative results and better population representation. Specifically, it is important to address that this participant population lacked diversity. It remains unclear whether or not this intervention would still be as successful for various ethnicities or cultures due to the underrepresentation of diversity within the sample.

Sustainability

To promote the sustainability of this project and its significant results, the DNP student provided the site with extra materials to continue utilizing the behavioral counseling intervention, including: patient handout folders, educational inserts (Appendix C), and extra copies of the RYP and RAPA tools (Appendix B). Additionally, the DNP student bookmarked the websites where the resources were located on the FNP's work computer, as these are easily accessible and free to download. The FNP was also equipped with the template to follow the counseling protocol within the EMR system (Appendix H). One hundred additional copies of these handouts and folders were provided to the office in hopes that the project would continue to reach the eligible patients who did not seek care during the recruitment timeframe. Findings from the project were reviewed at the project site with the clinical staff on February 28, 2023. At this time, none of the handouts the DNP student provided the site were found, nor were copies of the RYP or RAPA tools. There was also a new CMA working in this clinic who was not made aware of the previous project implementation. The DNP student asked about continued use of these handouts to engage more patients, but the RN reported it was too time consuming to continue the printing and education with the handout packets. The FNP reports not gaining enough information from the RYP and RAPA tools for continued use.

The FNP does report having adopted the use of the ASCVD risk calculator (ACC, 2021) for patients older than 40 years of age, and is now following up with high cholesterol patients in 3 months rather than 6 months' time. The FNP denies use of the EMR template currently, as he is not following up after 5 weeks to ensure goals are being upheld. Again, the mention of time was

a major contributing factor for sustainability. As a current employee for the company that owns this project site, additional efforts will be made to educate new employees of the significant findings and patient outcomes experienced within this project, as well as assist with continued efforts in LDL reductions.

Recommendations for the future use and sustainability of this project would be incorporating work flow changes in the EMR system as reminders to partake in some of these educational interventions. Due to the nature of our healthcare system today, the speed of appointments can overshadow the important conversations and education that need to be shared. Another idea would be ensuring the intervention was built into new staff training. It is easy to forget the project or not complete all aspects of the patient care if the staff are unaware of the current office and patient workflow. Lastly, finding healthy eating and exercise habits that tailor to holidays or celebrations may be beneficial given the timing of this project.

Relevance for EBP Model

The JHNEBP model served as the framework for this EBP project. The model consists of three phases and 17 steps to promote practice improvements and improve patient outcomes (Melnyk & Fineout-Overholt, 2019). The first phase, or practice question, utilized five steps to create the foundation of the project by identifying a clinical site, formulating a team, and identifying a problem. This phase elicits the need for leadership and team building in order to address the said problem. Given the small size of the project site, staff, and patient population, the model allowed for close connection with key stakeholders, and input from all members of the implementation team. Based on staff feedback, this phase was the most beneficial of the three as they reported feeling involved and understood when developing a team approach. Phase two, or the evidence phase, involved five steps in finding and appraising literature to develop the best evidence-based recommendations into a sustainable project. While this phase is the most tedious, it is arguably the most important, as EBP should be the foundation of care. Lastly, phase three, or the translation phase, is where implementation, evaluation, sustainability and

dissemination came into play. This phase took the most time, but is where the EBP recommendations stand out the most. With most of the outcomes being statistically significant, it shows the first two phases were successful in implementation. Sustainability becomes a key factor when achieving good results and the last few steps of JHNEBP address the need to identify future steps and reflect on the project as a whole before disseminating all of the findings. This creates a problem-solving approach to the integration of the best available practice, in order for the project to work within other organizations. The DNP student identified future steps that are needed to create a time saving approach that allows for the behavioral counseling session to occur in different office settings. One of which being the patient completes the RYP and RAPA questionnaires prior to the appointment time, that way the results could populate into the chart and be used in discussion during the appointment with no additional time being taken in the office. Another could be an algorithm within the EMR system that calculates ASCVD risk score, rather than the FNP having to input the information into an app. Overall, the JHNEBP model was extremely useful in this setting and guided the project smoothly. One consideration in future use could be incorporating team meetings, or step 5 of the model, at the end of each phase in order to continue promoting the team approach.

Recommendations for the Future

CVD continues to be the leading cause of death in the United States (CDC, 2022c). High cholesterol is a key risk factor in the development of CVD (CDC, 2022c), so the need for lifestyle modifications to lower cholesterol levels remains relevant for DNP students and APRNs to consider when in practice. Results from this EBP project support recommendations for future research on behavioral counseling and the implementation within a primary care setting.

Research

Although this project was evidence-based and the recommendations came from current literature, there are gaps in literature regarding further clinical investigation for adult patients with established CVD risk factors. Further research to investigate certain aspects of behavioral

counseling would be beneficial to improve counseling techniques. For instance, specific ASCVD risk tools and media components to utilize for the best patient results. Literature leaves broad guidelines to follow when completing a counseling session, possibly to be able to tailor education to specific patient needs, but future research could focus on specific guidelines to follow and tailor to certain medical conditions. Additional research should also address who is best suited to conduct these counseling sessions. No specific recommendations were found that differentiate the outcomes from either a dietician, physician, RN, physician assistant, FNP, or another provider leading these sessions successfully. Future research should focus on guiding a behavioral counseling session, to ensure the best outcomes for the most amount of people.

Education

Education is necessary to inform patients of their risk for developing CVD, especially when they have risk factors that may be modified simply by lifestyle management. Commitment to lifelong learning from the APRN stems from a desire to be informed of the best interventions and practices available for use. Given the number of patients affected by CVD, it is vital that continued education on prevention strategies should be examined in greater depth. While it takes a great deal of time and effort to address lifestyle modifications in this way, the risks of not being educated on the prevention strategies can have devasting effects on patient outcomes.

Conclusion

The purpose of this EBP project was to provide primary care providers with an EBP approach in addressing lifestyle modifications, through behavioral counseling and tailored education, to meet specific patient needs in order to reduce LDL levels and ultimately reduce CVD risk. Specifically, a multimodal approach utilizing educational handouts, goal setting, and media tools, in combination with frequent follow-ups to improve healthcare outcomes. This EBP project was implemented over a 10- to 12- week time period in a small direct primary care office in northwest Indiana. Fourteen participants completed the intervention and were evaluated based on their LDL levels, ASCVD risk score, weight, BMI, BP, RYP tool, and RAPA tool. A paired *t*-test

was used to analyze pre- and post-intervention data. Statistically significant results were seen in patient ASCVD scores, weight, BMI, systolic BP, RYP scores, and RAPA scores. Although there were not statistically significant reductions seen in LDL levels or diastolic BP, a decrease in the overall mean scores of these two were noted over 10- to 12- weeks. This project supports the utilization of a multimodal behavioral counseling intervention to decrease the overall risk of developing CVD and promote healthier lifestyle habits through diet and physical activity.

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BIOGRAPHICAL MATERIAL

Mrs. Hansen graduated Magna Cum Laude from the University of Southern Indiana in 2016 with a Bachelor of Science in Nursing. Following graduation, she moved to Indianapolis where she worked at Indianapolis University Methodist hospital in the Emergency Medicine and Trauma Center. After a year of working as a nurse, Mrs. Hansen became a Certified Emergency Nurse (CEN) and advanced her knowledge in trauma medicine with her Trauma Nursing Core Certification (TNCC). In 2018, she met her now husband and moved to northwest Indiana. She continued her emergency medicine career at St. Mary Medical Center in Hobart, Indiana. In 2019, she became trained as a Sexual Assault Nurse Examiner (SANE) and served on the Lake County sexual assault response team. Despite completing the goals she set for herself during her undergraduate schooling, Mrs. Hansen still felt called to do more with her nursing degree. In 2020, she entered the final leg of her educational journey and began the Doctor of Nursing Practice program at Valparaiso University. During her time in graduate school, she became a member of Sigma Theta Tau's Honor Society of Nursing- Zeta Epsilon Chapter and the American Association of Nurse Practitioners. In 2021, she stepped out of the emergency medicine world to further explore a family practice role. After shifting from the inpatient hustle to creating outpatient relationships, and through her rural community clinical experiences, Mrs. Hansen developed a passion for primary and preventative care. She has accepted a full-time position in family practice, providing care to an underserved community in Northwest Indiana, and is set to graduate with the highest distinction on May 13, 2023.

ACRONYM LIST

AA: Administrative Assistant

ACC: American College of Cardiology

AGREE: Appraisal of Guidelines for Research and Evaluation

AHA: American Heart Association

APP: Application

ASCVD: Atherosclerotic Cardiovascular Disease

BMI: Body Mass Index

CAD: Coronary Artery Disease

CDC: Centers for Disease Control

CINAHL: Cumulative Index to Nursing and Allied Health Literature

CMA: Certified Medical Assistant

CMO: Chief Medical Officer

CPG: Clinical Practice Guideline

CVD: Cardiovascular Disease

DASH: Dietary Approaches to Stop Hypertension

DM: Diabetes

DNP: Doctorate of Nursing Practice

EBP: Evidence-Based Practice

EMR: Electronic Medical Record

FNP: Family Nurse Practitioner

HDL: High-Density Lipoprotein

HTN: Hypertension

JBI: Joanna Briggs Institute

JHNEBP: John Hopkins Nursing Evidence-Based Practice Model

LDL: Low-Density Lipoprotein

NP: Nurse Practitioner

OR: Odds Ratio

PCE: Pooled Cohort Equation

PICOT: Patient, Intervention, Comparison, Outcome, Time

RAPA: Rapid Assessment of Physical Activity

RCT: Randomized Control Trial

RN: Registered Nurse

RYP: Rate Your Plate

SCORE: Systematic Coronary Risk Evaluation

SPSS: Statistical Package for Social Sciences

TC: Total Cholesterol

TRIP: Turning Research into Practice

USA: United States of America

USPSTF: United States Preventive Services Task Force

WHO: World Health Organization

APPENDIX A

Staff Educational PowerPoint

The Implementation of an Education Intervention to Lower LDL Levels

Blake Hansen

"I have neither given or received, nor have I tolerated others' use of unauthorized aid"

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What Is EBP?

- Theory-derived, research-based information
- Patient Preferences, Best Practice, and Clinical Judgement
- Creates patient centered care that increases patient satisfaction, is cost effective, and improves patient outcomes

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2

Background Information

- CVD is the leading cause of death globally and nationally.
  - Accounts for 1 in every 4 deaths in the US
- Key risk factors include: high blood pressure, high cholesterol, and smoking
  - All of which are modifiable
- Risk factors are aggravated by being overweight/obese, unhealthy diets, physical inactivity, and excessive alcohol use
  - Behavior changes can prevent deaths

(CDC, 2022; WHO, 2021)

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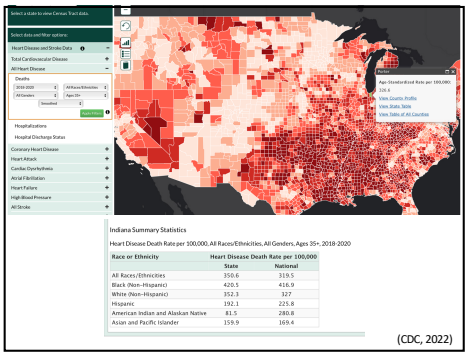

4

Focus on Hyperlipidemia

- Blood cholesterol is an important risk factor to watch for as a health care provider because it has no associated symptoms
- Cholesterol is created within the liver to assist in developing hormones and digesting fatty foods
  - The body makes all the cholesterol it needs, so little ingested cholesterol is actually required
- Cholesterol is a waxy, fatty-like substance that contributes to CVD due to excessive build up that blocks the flow of blood in the arteries and veins
- Low-density lipoprotein (LDL) is a dominant form of atherogenic cholesterol, and levels over 100 mg/dl in the blood are considered elevated and may lead to atherosclerotic cardiovascular disease (ASCVD)
- Atherosclerosis progresses as an individual ages

(CDC, 2022b, Grundy et al., 2019)

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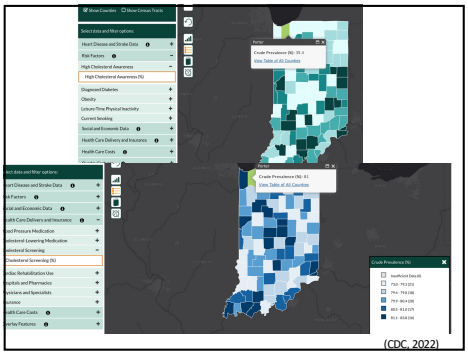

6

Clinical Agency Data

- 533 patients have utilized this clinic in 2022
  - Average 40 patients a week
- 168 of the 533 have >100 mg/dl LDL levels
  - 32%
- Zero charts with an ASCVD risk charted
- No longer utilize Dietician
- Continued need for lifestyle modifications

(C. Sileo, personal communication, July 22, 2022)

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Synthesis Of Literature

- Grade A recommendation that individuals 20 years and older complete a 10-year atherosclerotic cardiovascular risk assessment
- All patients regardless of their risk should attempt lifestyle modifications for the prevention and management of ASCVD through diet composition, weight control, and physical activity
- Grade A recommendation is made for multifaceted interventions that focus on dietary, behavioral, physical activity, and psychological aspects of health
  - Supplemental materials
  - Face-to-face, media, telephone behavioral counseling
  - No strong support for any specific individual to do the educating/counseling
  - Self-regulation, self-monitoring, tailored interventions

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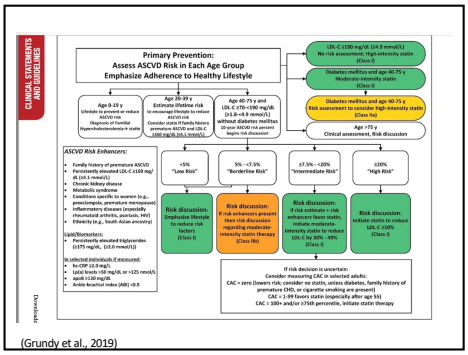

(Grundy et al., 2019)

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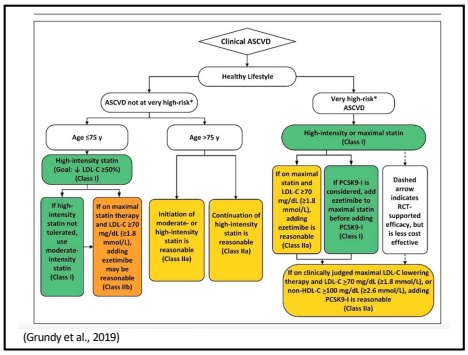

(Grundy et al., 2019)

10

Purpose of the Project

The purpose of this patient-centered, EBP project is to evaluate the effectiveness of a multifaceted behavioral counseling intervention that utilizes goal setting, educational supplements, and tools centered around improving LDL levels through lifestyle modifications

Eligible Participants:

-Any patient over 20 years of age

-Any patient with LDL level >100

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The Project

- Involves patient annual lab screenings, annual visit with the NP, and follow-up visits to check on progress
  - Need an initial lipid panel to identify eligible patients
  - Initial provider visit (annual exam)
    - History and Physical
    - RAPA and RYP tools
    - Behavioral Counseling
  - One follow-up phone visit (5-weeks)
    - Behavioral Counseling
  - Another follow-up, in-person visit (10-weeks)
    - Behavioral Counseling
    - Repeat lipid panel
    - RAPA and RYP tools

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- Step One (the DNP student):
  - The DNP student will identify eligible participants, call those patients and inform them of the project, and schedule an initial visit with the NP
  - If this patient has not had a recent lipid panel, within the last four weeks, a new lipid panel will be drawn and the patient will present to the clinic when those results have been posted and validated that the patient is still an eligible candidate
    - The patients will all have the opportunity to decline the project and their participation and continue their normal care plan

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- Step Two (RN/CMA/AA):
  - The patient will be roomed and routine care for an annual exam will be performed and documented
    - Emphasis will be placed on documenting accurate vital signs, height, weight, drug and alcohol history, medication reconciliation, and medical history
    - A quick lab review will be conducted to identify eligible candidates (LDL levels > 100 mg/dl)

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- For ALL eligible candidates- Informed Consent will need to be obtained (explain the project, allow them to read the form and sign)
  - Copy this form for the patient, and place a copy in the folder labeled "project"
- If they do NOT want to sign: continue care as usual
- If they DO sign:
  - Hand the patient the two health tools (RAPA and RYP). Ensure they are filled out completely, and place them in the project folder
  - Gain a self-Report of patient Mobile Phone Lifestyle App Usage (yes or no), and write answer at the bottom of the RAPA tool
  - Notify the NP of the patient approval for behavioral counseling

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- Step Three (NP):
  - Use ACC ASCVD calculator app to calculate 10-year ASCVD risk. Document this in the EMR and use this to educate, counsel, and treat the patient
    - Note: If this number is above 5%, follow ACC/AHA algorithm for pharmacotherapy treatment/shared decision making for additional intervention
  - Conduct annual visit as normal for all other patient complaints and concerns
  - Conduct a 20 minute behavioral counseling session on lifestyle modifications for decreasing LDL levels
    - Utilize the patient handout folder for assistance with education and send patient home with the folder

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What is Behavioral Counseling?

- Formal advice and guidance
- Tailored to the individuals personal and cultural preferences and abilities
- Open dialogue to find solutions and change negative behaviors
- Emphasis on self-monitoring and self-regulation
  - Lifestyle apps for guidance at home
- Have the patient set three goals and document these goals to readdress at each visit

Educational Handout Packet will help guide this counsel

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EBP Dietary Recommendations

- Restrict caloric intake
- Increase dietary fiber
- Increase fruit and vegetable intake
- Lower salt/sodium intake
- Decrease saturated fat intake
- Eliminating trans fats
- Consume whole grains
- Consume low-fat dairy products
- DASH and Mediterranean diets

Examples in Handout Packet

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EBP Physical Activity Recommendations

- Weight loss promotion
- Physically activity three to four times a week for 30–40-minute sessions of moderate-to-vigorous activities
  Examples in Handout Packet

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Lifestyle Apps

- All of the following are free of charge:

MyFitness Pal

Fooducate

MyPlate

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MyFitnessPal

■ **Log Food** – Easy-to-use tools make food tracking quick and simple
■ **Track Activity** – Add workouts and steps with the fitness tracker
■ **Customize Your Goals** – Weight loss, weight gain, weight maintenance, nutrition & fitness
■ **See Your Progress** – Track at a glance, or analyze nutrition & calories in detail
■ **Learn From a Registered Dietitian** – Meal Plans customized for your target calories, whether you want to lose or gain weight—with access to our Meal Planner
■ **Stay Inspired** – 500+ healthy recipes and 50 workouts keep routines fresh and fun
■ **Connect With Community** – Find friends and motivation in our active forums

■ One of the Largest Food Databases – Track calories in over 14 million foods (including meals/fast dishes)
■ Fast & Easy Food Tracker Tools – Type to search, add foods from your history, or scan a barcode or entire meal with your phone's camera
■ Calorie Tracker – Automatically count calories and see your daily progress
■ Macro Tracker – See carbs, fat & protein breakdown by gram or percentage—no need for a separate carb tracker or keto diet app!
■ Nutrition Tracker and Insights – Analyze nutrition intake and set specific goals for macros, cholesterol, sodium, fiber & more
■ Water Tracker – Track to make sure you're staying hydrated

■ Custom Goals – Track calories by meal or day, set up macro goals & more
■ Personalized Dashboards – Pick stats you want to see at a glance
■ Net Carbs Mode/Carb Tracker – To simplify a low carb or keto diet, view net (not total) carbs
■ Protein Counter – Set your protein goals and track how much you eat during the day
■ Add Your Own Foods/Meal Tracker – Save recipes and meals for quick logging
■ Count Calories From Exercise – Decide how activities affect daily calorie goals
■ Connect 50+ Apps & Devices – From fitness tracker and smartwatch apps
■ Track With Wear OS – A calorie tracker, water tracker, and macro tracker on your watch face.

(MyFitnessPal, 2022)

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Fooducate

+ A meal tracker and so much more
+ Track your food intake and exercise
+ Track the quality of calories
+ Track your macros: protein, fats, carbs
+ Scan over 250,000 product barcodes
+ Get a personalized nutrition grade (A, B, C, or D) for each food
+ Get suggestions for healthier foods based on what you scan
+ Free health & diet tips from nutrition professionals
+ Free weight loss tips
+ Motivation, love & support from the community

Fooducate analyzes information found in product nutrition panels and ingredient lists. Scan to discover things manufacturers don't want you to notice:
- added sugars
- artificial sweeteners such as aspartame
- trans fats
- high fructose corn syrup
- MSG
- controversial food colorings
- GMO - genetical modified organisms (premium feature)
- additives and preservatives

Easily personalized
Rated as a top weight loss app

(Maple Media, 2022)

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MyPlate

- Browse a comprehensive food database with over 2 million items
- Use our handy bar code scanner to find and track food easily
- Create custom foods and meals
- Get a personalized daily calorie goal based on your profile information
- Keep track of your weight and progress over time
- Review detailed data and create custom daily goals for your nutritional intake of protein, fat, carbs, fiber, sugar, sodium & more
- Easily keep track of your water intake
- Get real-time, 24/7 support from members of our motivational community and others on a similar journey
- Set meal-time reminders to keep you on track
- Integrate with Google Fit app to automatically track daily walking, running and biking activity
- Log workouts from our extensive exercise tracking database
- Create custom exercises or enter calories burned – helpful when using exercise equipment or heart-rate monitors
- Sync with the Calorie Tracker via the LIVESTRONG.COM website at http://www.livestrong.com/myplate/

(MyPlate, 2021)

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- Step Four (AA/RN/CMA):
  - Two follow-up appointments will be made prior to the patient leaving the initial appointment
    - One appointment will be made for five-weeks
      - Telephone Visit labeled *Behavioral Counseling*
      - 20-minute behavioral counseling with NP (30 minutes in EMR for charting purposes)
    - The second appoint will be made for ten-weeks
      - In-person visit labeled *Behavioral Counseling with lipid panel*
      - 15-minute nurse appointment
      - 20-minute behavioral counseling with NP (30 minutes in EMR for charting purposes)

If these cannot be made, place an appointment tickler in the chart

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– 10-week appointment details:
- Fasting lipid panel
- RAPA and RYP tools handed to the patient to fill out and placed in project folder
- Self-Report of Mobile Phone Lifestyle App Usage (yes or no), write answer on bottom of RAPA tool
- Repeat vital signs, height, weight, medication reconciliation, medical history, drug and alcohol usage and document in the EMR
- Behavioral Counseling with NP

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Role Play a Patient Case Scenario

Any Questions or Concerns?

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Appendix B

Lifestyle Tools

Rapid Assessment of Physical Activity (RAPA) Tool

How Physically Active Are You?

An assessment of level and intensity of physical activity

Rapid Assessment of Physical Activity

Physical Activities are activities where you move and increase your heart rate above its resting rate, whether you do them for pleasure, work, or transportation.

The following questions ask about the amount and intensity of physical activity you usually do. The intensity of the activity is related to the amount of energy you use to do these activities.

Examples of physical activity intensity levels:

Light activities • your heart beats slightly faster than normal • you can talk and sing	 Walking Leisurely  Stretching  Vacuuming or Light Yard Work
Moderate activities • your heart beats faster than normal • you can talk but not sing	 Fast Walking  Aerobics Class  Strength Training  Swimming Gently
Vigorous activities • your heart rate increases a lot • you can't talk or your talking is broken up by large breaths	 Stair Machine  Jogging or Running  Tennis, Racquetball, Pickleball or Badminton

How physically active are you? *(Check one answer on each line)*

			Does this accurately describe you?	
RAPA 1	1	I rarely or never do any physical activities.	Yes ☐	No ☐
	2	I do some **light** or **moderate** physical activities, but not every week.	Yes ☐	No ☐
	3	I do some **light** physical activity every week.	Yes ☐	No ☐
	4	I do **moderate** physical activities every week, but less than 30 minutes a day or 5 days a week.	Yes ☐	No ☐
	5	I do **vigorous** physical activities every week, but less than 20 minutes a day or 3 days a week.	Yes ☐	No ☐
	6	I do 30 minutes or more a day of **moderate** physical activities, 5 or more days a week.	Yes ☐	No ☐
	7	I do 20 minutes or more a day of **vigorous** physical activities, 3 or more days a week.	Yes ☐	No ☐
RAPA 2 (3 = Both 1 & 2)	1	I do activities to increase muscle **strength**, such as lifting weights or calisthenics, once a week or more.	Yes ☐	No ☐
	2	I do activities to improve **flexibility**, such as stretching or yoga, once a week or more.	Yes ☐	No ☐

ID # _____

Today's Date _____

Scoring Instructions

RAPA 1: Aerobic

To score, choose the question with the highest score with an affirmative response. Any number less than 6 is suboptimal.

For scoring or summarizing categorically:

Score as sedentary:

1. I rarely or never do any physical activities.

Score as under-active:

2. I do some light or moderate physical activities, but not every week.

Score as under-active regular – light activities:

3. I do some light physical activity every week.

Score as under-active regular:

4. I do moderate physical activities every week, but less than 30 minutes a day or 5 days a week.
5. I do vigorous physical activities every week, but less than 20 minutes a day or 3 days a week.

Score as active:

6. I do 30 minutes or more a day of moderate physical activities, 5 or more days a week.
7. I do 20 minutes or more a day of vigorous physical activities, 3 or more days a week.

RAPA 2: Strength & Flexibility

I do activities to increase muscle strength, such as lifting weights or calisthenics, once a week or more. (1)

I do activities to improve flexibility, such as stretching or yoga, once a week or more. (2)

Both. (3)

None (0)

Use of RAPA & TAPA

If you would like to use either of these tools,

please fill out a short registration form so we can track their usage.

Citation & Use

RAPA and TAPA may be used for personal use, clinical practice, or research, provided that it is not sold or altered without permission of the UW Health Promotion Research Center.

Suggested citation:

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Download the Tools

Rapid Assessment of Physical Activity (RAPA)

RAPA: ENGLISH

RAPA: MEXICAN SPANISH

Mall Walking:
A Program Resource Guide

Rapid Assessment of Physical Activity (RAPA)

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Rate Your Plate (RYP) Tool

RATE YOUR PLATE

Think about the way you usually eat. For each food topic, put a check mark ✓ in column A, B or C.

TOPIC	A	B	C
1. **GRAINS** ***Serving*** *= 1 slice bread or tortilla; 1/2 bagel, roll, English muffin or pita; ½ cup cooked rice or pasta; 1 cup cereal*	☐ **Usually eat:** less than 4 servings of grain products a day	☐ **Usually eat:** 4-5 servings of grain products a day	☐ **Usually eat:** 6 or more servings of grain products a day
2. WHOLE GRAINS	☐ **Usually eat:** white breads; white rice; low fiber cereals like corn flakes, krispies, etc	☐ **Sometimes eat:** white breads; white rice; low fiber cereals like corn flakes, krispies, etc	☐ **Usually eat:** whole grain breads; brown rice; whole grain cereals like oatmeal, bran cereals, Wheaties™, etc.
3. FRUITS & VEGETABLES *(1 serving = ½ cup or 1 med. fruit or 1 cup leafy raw vegetables or 4 oz. 100% fruit/veg. juice*	☐ **Usually eat:** 1 serving or less a day	☐ **Usually eat:** 2-4 servings a day	☐ **Usually eat:** 5 or more servings a day
4. DAIRY FOODS ***Serving*** *= 1 cup milk or yogurt; 1½ - 2 ounces cheese*	☐ **Rarely eat or drink**: 2 or more servings of milk, yogurt, or cheese a day	☐ **Sometimes eat or drink**: 2 servings of milk, yogurt, or cheese a day	☐ **Usually eat or drink:** 2 or more servings of milk, yogurt, or cheese a day
5. MEAT, CHICKEN, TURKEY OR FISH* *3 ounces is the size of a deck of cards or 1 regular hamburger, 1 chicken breast or leg or 1 pork chop*	☐ **Usually eat:** more than 6 ounces of meat, chicken, turkey or fish per day	☐ **Sometimes eat:** more than 6 ounces of meat, chicken, turkey or fish per day	☐ **Rarely/never eat:** more than 6 ounces of meat, chicken, turkey or fish per day
6. EATING OUT *in restaurants or getting take out food*	☐ **Usually** eat out or get take-out food **twice a week or more**	☐ **Usually** eat out or get take-out food **once a week**	☐ **Usually** eat out or get take-out food **less than once a week** OR Usually eat **low-fat restaurant meals**
7. RED MEAT *beef, hamburger, pork, lamb, veal*	☐ **Usually eat:** three times a week or more	☐ **Usually eat:** twice a week	☐ **Usually eat:** once a week or less
8. RED MEAT CHOICES *beef, hamburger, pork, lamb, veal*	☐ **Usually eat:** high-fat cuts, such as ribs, brisket, T-bone steak, prime rib, sausage, regular or lean ground beef	☐ **Sometimes eat:** high-fat cuts such as: ribs, brisket, T-bone steak, prime rib, sausage, regular or lean ground beef	☐ **Usually eat:** lean beef such as round, loin, flank; lean pork and lamb such as loin and leg; veal; ground turkey breast Or, I **rarely eat** meat
9. COLD CUTS, HOT DOGS, BREAKFAST MEATS	☐ **Usually/often eat:** salami, bologna, other cold cuts, hot dogs, bacon, sausage	☐ **Sometimes eat:** salami, bologna, other cold cuts, hot dogs, bacon, sausage	☐ **Usually eat:** roast beef, turkey breast, ham, or low-fat cold cuts, low-fat hot dogs, low fat bacon/sausage Or, **I rarely eat** processed meats
10. CHICKEN, TURKEY,	☐ Usually eat:	☐ Sometimes eat:	☐ Usually eat:

* If you never eat these foods, check column C.

ETC.*	chicken, turkey, and other poultry with skin	chicken, turkey, and other poultry with skin	chicken, turkey, and other poultry without skin
11. CHICKEN AND FISH CHOICES*	☐ **Usually eat:** fried chicken and/or fried fish and shellfish	☐ **Sometimes eat:** fried chicken and/or fried fish and shellfish	☐ **Usually eat:** chicken and fish that is baked, broiled, grilled, poached, roasted, etc.
12. MEATLESS MAIN DISHES ***like*** *all-****be****an chili, bean burrito, lentil soup, meatless spaghetti sauce*	☐ **Rarely eat:** meatless main dishes	☐ **Usually eat:** meatless main dishes less than twice a week	☐ **Usually eat:** meatless main dishes twice a week or more
13. MILK*	☐ **Usually drink/use:** whole milk or cream	☐ **Usually drink/use:** 2% reduced-fat milk	☐ **Usually drink/use:** 1% low-fat or skim milk
14. CHEESE *include cheese on pizza, sandwiches, snacks & in mixed dishes*	☐ **Usually eat:** regular cheese, such as cheddar, Swiss, and American	☐ **Sometimes eat:** regular cheese, such as cheddar, Swiss, and American	☐ **Usually eat:** reduced-fat or part-skim cheese Or, **Rarely eat** cheese
15. FROZEN DESSERTS *ice cream, etc.*	☐ **Usually eat:** regular ice cream, ice cream bars/sandwiches	☐ **Sometimes eat:** regular ice cream, ice cream bars/sandwiches	☐ **Usually eat:** sherbet, sorbet, low-fat frozen yogurt or ice cream Or, **Rarely eat** frozen desserts
16. COOKING METHOD	☐ **Usually add:** oil, butter, or margarine to the pan	☐ **Sometimes add:** oil, butter, or margarine to the pan	☐ **Usually:** broil, bake, or steam without fats or oils or use cooking sprays (Pam™)
17. FRIED FOODS *like French fries, egg rolls, onion rings, etc.*	☐ **Often eat:** fried foods	☐ **Sometimes eat:** fried foods	☐ **Rarely/Never eat:** fried foods
18. SPREADS *Added at the table*	☐ **Usually put:** butter or stick margarine on bread, potatoes, vegetables, etc.	☐ **Usually put:** liquid or regular tub margarine on bread, potatoes, vegetables, etc.	☐ **Usually put:** **"**light" tub margarine on bread, potatoes, vegetables Or, **Eat them plain**
19. SALAD DRESSING & MAYONNAISE*	☐ **Usually use:** regular salad dressing or mayonnaise	☐ **Sometimes use:** regular salad dressing or mayonnaise	☐ **Usually use:** light or fat-free salad dressing and mayonnaise
20. SNACKS	☐ **Usually eat:** regular chips, crackers, and nuts	☐ **Sometimes eat:** regular chips, crackers, and nuts	☐ **Usually eat:** fruit, pretzels, low-fat crackers or baked chips
21. DESSERTS & SWEETS	☐ **Usually eat:** donuts, cookies, cake, pie, pastry or chocolate	☐ **Sometimes eat:** donuts, cookies, cake, pie, pastry, or chocolate	☐ **Usually eat:** fruit, angel food cake, low-fat or fat-free sweets
22. ADDED SALT	☐ **Always/Usually:** add salt to food when cooking or at the table	☐ **Sometimes:** add salt to food when cooking or at the table	☐ **Rarely/Never:** add salt to food when cooking or at the table
23. CANNED FOODS, FROZEN, PACKAGED MEALS	☐ **Usually:** choose regular canned/frozen/packaged foods.	☐ **Sometimes**: choose regular canned, frozen, packaged foods.	☐ **Usually**: choose low sodium canned, frozen, packaged foods. Or, rarely eat these foods
24. SALTY SNACKS *chips, pretzels, crackers, salted nuts*	☐ **Often eat**: salty snacks	☐ **Sometimes eat:** salty snacks	☐ **Rarely/Never eat:** salty snacks
25. DESSERTS AND	☐ **Usually eat:** high sugar desserts & sweets	☐ **Sometimes eat:** low sugar desserts & sweets	☐ **Usually eat:** low sugar desserts & sweets

* If you never eat these foods, check column C.

SWEETS			
26. SODA, PUNCH, ETC. *Soda, pop, fruit drink, punch, Kool-Aid*, etc.	☐ Usually drink **16 oz. or more** of non-diet soda, punch, etc. per day	☐ Usually drink **8-15 oz.** of non-diet soda, punch, etc. per day	☐ Usually drink **less than 8 oz.** of non-diet soda, punch, etc. per day
27. BEER, WINE, LIQUOR *One drink = 12 oz. beer, 5 oz. wine, one shot of hard liquor or mixed drink with 1 shot*	☐ **Often drink:** more than 1-2 alcoholic drinks in a day.	☐ **Sometimes drink:** more than 1-2 alcoholic drinks in a day.	☐ **Rarely/never drink:** more than 1-2 alcoholic drinks in a day.

Find your Rate Your Plate score:

Total checks in column A =_____ x 1 =_____
Total checks in column B =_____ x 2 =_____
Total checks in column C =_____ x 3 =_____
TOTAL _____

If your score is:

27-45: There are many ways you can make your eating habits healthier.

46-63: There are some ways you can make your eating habits healthier.

64-81: You are making many healthy choices.

Look back at your Rate Your Plate.

Do you have any answers in Column C? If you do, great! You are already making some heart healthy choices. Look at your answers in Columns A and B. Where you checked Column A, can you start eating more like Column B? Over time, move toward Column C.

Set goals. Write down eating changes you are ready to make now.

Goal 1: _____

Goal 2:_____

Goal 3:_____

Begin today. Make changes a little at a time. Let your new way of eating become a healthy habit.

* If you never eat these foods, check column C.

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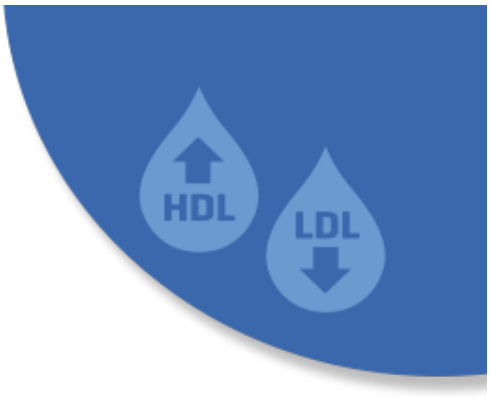
Rate Your Plate

RATE YOUR PLATE ▸

Appendix C

Educational Handouts

American Heart Association.
Check. Change. Control.®
Cholesterol



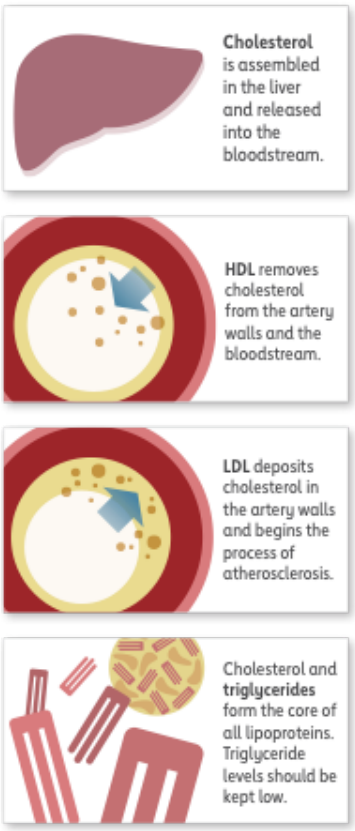
TOTAL CHOLESTEROL

CHOLESTEROL is a waxy substance. Your liver makes all the cholesterol you need. The rest of the cholesterol in your body comes from foods derived from animals such as meat, poultry and full-fat dairy products. The body uses cholesterol to form cell membranes, aid in digestion, convert Vitamin D in the skin and make hormones. Two types of lipoproteins carry cholesterol to and from cells. **High-density lipoproteins** and **low-density lipoproteins**. **Triglycerides** are the most common type of fat in the body. Your total cholesterol is a measurement of these three key components of cholesterol.

1. **High density lipoproteins (HDL cholesterol)** are called GOOD cholesterol because they remove cholesterol from the bloodstream and the artery walls. A healthy HDL-cholesterol level may protect against heart attack and stroke. Studies show that low levels of HDL cholesterol increase the risk of heart disease.

2. **Low density lipoproteins (LDL cholesterol)** are considered BAD cholesterol. While they carry needed cholesterol to all parts of the body, too much LDL contributes to fatty buildups in arteries. This narrows the arteries and increases the risk for heart attack, stroke and peripheral artery disease, or PAD.

3. **Triglycerides** are the most common type of fat in the body. They store excess energy from your diet. A high triglyceride level combined with high LDL (bad) cholesterol or low HDL (good) cholesterol is linked with fatty buildups within the artery walls, which increases the risk of heart attack and stroke.



HDL + LDL + 20% Triglycerides = **TOTAL CHOLESTEROL**

AMGEN
Cardiovascular

Amgen sponsors the American Heart Association's Check. Change. Control. Cholesterol.™ Initiative

Learn more about cholesterol at **heart.org/Cholesterol**

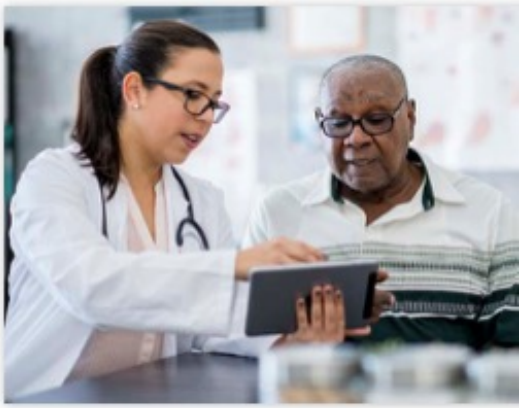
Your Treatment Plan & Lifestyle Changes

Working With Your Health Care Professional

Your health care professional is there to help you reach your health goals, including keeping your cholesterol at healthy levels. Work closely with your clinician to make the best decisions for you, and then stick to the plan. Making decisions together is the best way to create a treatment plan you'll be more likely to stick to.

Take part in making decisions about your health together and asking the right questions. If you don't understand something, ask for further clarification.

Here's a helpful checklist that you and your health care professional should go through to determine your risk and the best treatment options for you.



☐ **Assess Your Risk**

If you're between 20 and 39, your health care professional may assess your lifetime risk. If your risk is high or if you have a family history of early CVD and have an LDL of 160 mg/dL or more, your clinician may recommend statin medications and lifestyle changes to lower your risk.

If you're between the ages of 40 and 75, you can use the Check. Change. Control. Calculator™ to estimate your 10-year risk of having a heart attack or stroke.

My risk score is:

_____

Discuss your risk score and risk enhancing factors (see Page 7) and how they affect your risk. Ask if additional tests may be needed.

☐ **Discuss lifestyle changes** *(e.g., diet, physical activity, weight or body mass index, and not smoking)* you can work on.

Goals I need to work toward:

- ☐ Physical Activity: _____
- ☐ Weight Loss: _____
- ☐ Diet: _____
- ☐ Quit Smoking: _____
- ☐ Other: _____

If you need help making these changes, ask your health care professional for information or materials to assist you.

Heart Healthy Cooking– Made Easy

Eating certain foods can increase your risk for heart disease. It can be difficult to change eating habits, but if you make changes to your diet slowly, it can be easy and fun! Here are some heart healthy diet tips that you should keep in mind.

1. Control your portion sizes. Remember how much you eat is as important as what you eat. Controlling portions helps you from consuming excess calories which is important to maintain weight.
2. Eat more fruits and vegetables. Fruits and vegetables will provide you with more vitamins and minerals and contain substances that are heart protective.
3. Eat whole grains. Whole grains are good sources of fiber and play a role in protecting your heart health.
4. Limit saturated and trans fats. Limiting these fats by choosing more of heart healthy fats. This can help you lower bad cholesterol and reduces your risk for coronary artery disease.
5. Choose lean protein sources. Lean meats are lower in overall fats which helps you to manage total calorie intake, are lower in saturated fats and certain lean meats are high in heart healthy fats.
6. Reduce sodium intake. Reducing sodium is an important part of heart healthy diet. High sodium intake can increase your blood pressure which is a risk factor for heart disease.
7. Plan ahead and allow yourself occasional treats. Planning can help you stick with your diet better without feeling overwhelmed. Treating yourself once in a while won't derail your heart health .

Modify Your Favorite Recipes Using the Tips Provided Above

As you decide how to make a recipe more healthy, start by asking yourself these questions:

1) *Which ingredients contribute more saturated fat, cholesterol, sodium, sugar, or calories than I should have?*
   These ingredients might include fatty meats, cheese, cream, whole milk, egg yolks, butter, lard, vegetable shortening, salt, soy sauce, cream soups, sugars, or honey, etc.

2) *Are all of these ingredients necessary? Can I leave them out of the recipe?*
   Sometimes the cheese used for "decoration" can be omitted, egg whites can be used instead of whole eggs, and a healthy oil can be used instead of butter or shortening without making big changes in the taste and texture of the recipe.

3) *If the ingredient is necessary, how can it be modified to meet my nutrition goals?*
   You may be able to reduce the amount of the ingredient. For example, the amount of meat in many main dishes can be reduced by ¼ to ½, and fat and sugar in baked goods can often be reduced by ¼ to ⅓. You may also be able to substitute a healthier version of the ingredient. See the list below for some suggestions.

Try the following swaps to lower sugar in your diet:

Instead of:	**Try**:
Baking and cooking:	
Regular sugar	Unsweetened applesauce and/or half the quantity of sugar recommended
Desserts and Sweets:	
Traditional sugar-based dessert	Natural sweetness of fruit. Can be fresh frozen or canned in its own juice. Try it baked, grilled or stewed
Dressings and sauces:	
Store bought salad dressings, barbecue sauces, tomato sauces, ketchups	Home made versions will have lower sugars
Beverages:	
Sodas and soft drinks	Plain or sparkling water or flavored water with mint, citrus fruits or cucumber or a splash of 100% fruit juice
Tea and coffee:	
Sugar, honey or agave syrup	No calorie sweeteners will give you the same sweetness as 2 tsp of sugar but without calories
Snacks:	
Sugary snacks and granola. Candies and chocolates	Combine unsalted nuts, raisins, dried fruits and seeds to make your own trail mix. Can add rolled oats, whole grain cereals (non-sugar, non-frosted)

Try following to lower sodium in your diet:

Instead of:	**Try**:
Grocery shopping:	
Regular snacks	Look for low-sodium snacks. Read Labels and stick with ~140-250mg/serving sodium. Buy low-sodium foods and not reduced sodium
Canned Soups	Check labels and try low-sodium variety
Canned vegetables	Fresh or frozen vegetables
Meats	Fresh meats are better that lunch/deli meats
Eating out:	
Pizzas	Make or order pizza with less cheese and meats Add vegetables
Lunch/Deli meat sandwiches	Low sodium turkey/chicken sandwiches Add fresh vegetables Limit cheese and condiments
Spice it up:	
Salt	Be creative with flavorful alternatives to salt. See below for some ideas and examples

Remember:
Breads & rolls, savory snacks, soups, cured meats, cold cuts, pizzas, poultry and sandwiches can be loaded with salt.
Eat fresh fruits and vegetables to strike a balance and reduce salt intake without missing it.

Seasoning alternatives:

- **Almond extract:** Puddings, fruits
- **Basil:** Fish, lamb, lean ground meats, stews, salads, soups, sauces, fish cocktails
- **Bay leaves:** Lean meats, stews, poultry, soups, tomatoes
- **Caraway seeds:** Lean meats, stews, soups, salads, breads, cabbage, asparagus, noodles
- **Chives:** Salads, sauces, soups, lean meat dishes, vegetables
- **Cider vinegar:** Salads, vegetables, sauces
- **Cinnamon:** Fruits (especially apples), breads, pie crusts
- **Curry powder:** Lean meats (especially lamb), veal, chicken, fish, tomatoes, tomato soup, mayonnaise
- **Dill:** Fish sauces, soups, tomatoes, cabbages, carrots, cauliflower, green beans, cucumbers, potatoes, salads, macaroni, lean beef, lamb, chicken, fish
- **Garlic** (not garlic salt): Lean meats, fish, soups, salads, vegetables, tomatoes, potatoes
- **Ginger:** Chicken, fruits
- **Lemon juice:** Lean meats, fish, poultry, salads, vegetables
- **Mace:** Hot breads, apples, fruit salads, carrots, cauliflower, squash, potatoes, veal, lamb
- **Mustard (dry):** Lean ground meats, lean meats, chicken, fish, salads, asparagus, broccoli, Brussels sprouts, cabbage, mayonnaise, sauces
- **Nutmeg:** Fruits, pie crust, lemonade, potatoes, chicken, fish, lean meat loaf, toast, veal, pudding
- **Onion powder** (not onion salt): Lean meats, stews, vegetables, salads, soups
- **Paprika:** Lean meats, fish, soups, salads, sauces, vegetables
- **Parsley:** Lean meats, fish, soups, salads, sauces, vegetables
- **Peppermint extract:** Puddings, fruits
- **Pimiento:** Salads, vegetables, casserole dishes
- **Rosemary:** Chicken, veal, lean meat loaf, lean beef, lean pork, sauces, stuffings, potatoes, peas, lima beans
- **Sage:** Lean meats, stews, biscuits, tomatoes, green beans, fish, lima beans, onions, lean pork
- **Savory:** Salads, lean pork, lean ground meats, soups, green beans, squash, tomatoes, lima beans, peas
- **Thyme:** Lean meats (especially veal and lean pork), sauces, soups, onions, peas, tomatoes, salads
- **Turmeric:** Lean meats, fish, sauces, rice

Try following swaps to lower saturated fat intake

Instead of:	Try:
Meals:	
Fatty Meats	A leaner version of the meat (ground round instead of regular hamburger) Less meat than the recipe indicates Browning the meat and draining the fat before adding to the recipe Eliminating the meat and adding beans or soy protein products as a protein replacement
Meals and Cooking and Baking	
Butter as a spread	Soft tub margarine on bread and rolls Low-fat tub margarines–good substitutes for butter on bread or vegetables, but do not work as well for baking Applesauce or other fruit toppings on waffles and pancakes Spreads made by blending low-fat Ricotta cheese with jam or other flavorings
Butter, Lard or Shortening	Oil in cakes, banana bread, muffins–use ¾ tbsp oil to replace each tbsp of butter, stick margarine, or shortening Applesauce to replace 50% of the fat in many recipes for cakes or fruit breads. Vegetable oil sprays or small amounts of oil in skillets and pans Add broth or water to reduce the amount of fat needed for sautéing.
Half and half	Evaporated skim milk–in baked goods, puddings, pumpkin pie Fat-free coffee cream substitutes - in non-baked desserts
Sour cream	Fat-free or low-fat sour cream Greek yogurt Yogurt cheese–drain plain yogurt in a fine sieve or cheesecloth-lined strainer for several hours (keep refrigerated). Has consistency and flavor of sour cream or cream cheese. Blend one cup fat-free cottage cheese with 1 tbsp. lemon juice. This will work for dips or dressings, but not baking or cooking.
Regular Cheese–made from whole milk	Small amounts of part-skim, low-fat cheese Fat-free cheese, if it provides the texture that you want Smaller amounts of highly flavored cheese (Parmesan, Bleu, Romano, feta)
Cream cheese	Fat free cream cheese–does not work well in recipes Low fat cream cheese–sometimes labeled Neufchâtel–has ⅓ to ½ less fat than regular Yogurt cheese (see above) as a spread

Creamy dips	Use low-fat or fat-free plain yogurt combined with low-fat mayonnaise. Avocado–low in saturated fat, although higher in calories
Cream Soups	Low-fat canned cream soups–Healthy Request, Healthy Choice, etc. Puree potatoes or part of the vegetables in the soup to get a creamy texture
Whole eggs	Two egg whites = one whole egg for baking Commercial egg substitutes made from egg whites
Gravy	Low-fat gravy–chill meat broth in refrigerator, remove fat after it hardens, or, use fat-skimming cup to remove fat from hot or warm meat broth. Thicken fat-free broth with cornstarch or flour. Low-fat or fat-free canned or packaged gravy–although these are usually high in salt
Nuts	Fat in nuts does not raise cholesterol levels, but does contain calories, so be careful with amounts. Fewer nuts in recipes will reduce calories. Toast nuts to intensify flavor so you can use less.
Ice Cream	Sorbet, fruit ices, sherbet, low-fat or fat-free ice cream or frozen yogurt are lower in fat, but still contain sugar and calories.
Mayonnaise	Regular mayonnaise does not contain much saturated fat, but has 100 calories per tablespoon. Use low-fat or fat-free mayonnaise Use half low-fat mayonnaise and half plain yogurt to make a creamy dressing for potato or macaroni salad. Use a vinaigrette dressing for salads instead of mayonnaise (vinegar, lime juice or lemon juice with oil and seasonings).
Marinades	Use smaller amounts of oil in marinades
Pie crust	Eat more fruit desserts in the form of crisps, cobblers Bake pumpkin pie without a crust. No substitute will give the same texture as lard, butter, or shortening in pie crust. Crust can be made with oil to reduce saturated fat, but calories will still be high and texture will be different. Graham cracker crust contains about the same amount of fat as other crusts.
Flour	Substitute equal amounts of a whole grain flour for ¼ to ½ of the white flour in a recipe to increase fiber intake. Make oat flour by grinding dry oatmeal in the blender until it has a crumbly, flour-like texture. Replace ¼ to ½ of the white flour in muffins, bread, pancakes, biscuits.

Vegetables	Add vegetables to casseroles, even if the recipe doesn't call for them. Add finely chopped vegetables to sauces for more nutrition and flavor. Include ground or finely chopped carrots and peppers in spaghetti sauce, sloppy Joe sandwiches and chili
Seasonings	Salt can be eliminated completely from all recipes except yeast breads without affecting texture. Start by reducing the salt in foods by one-half, gradually reduce further as your taste allows. Use additional flavorings so you don't miss the salt–herbs, onion, garlic, ginger, hot peppers, lemon and lime.

When altering your recipes, start slow, making small alterations until you achieve a balance between optimal nutrition and good taste. Don't be too drastic–recipes don't have to be fat or sugar-free to fit in your diet plan. If you are making changes in a recipe, it works best to make only one change at a time. That way, if the recipe doesn't turn out the way you expected, you will be able to identify why and try something different the next time.

For additional resources on heart healthy cooking, grocery shopping and dining out visit the following websites:

Nutrition Basics:
http://www.heart.org/HEARTORG/GettingHealthy/NutritionCenter/HealthyEating/Nutrition-Basics_UCM_461228_Article.jsp

Heart Healthy Grocery Shopping:
http://www.heart.org/HEARTORG/GettingHealthy/NutritionCenter/HealthyEating/Heart-Healthy-Grocery-Shopping_UCM_470398_Article.jsp

Making Healthier Choices:
http://www.heart.org/HEARTORG/GettingHealthy/NutritionCenter/HealthyEating/Making-Healthy-Choices_UCM_461295_Article.jsp

Seasonal Eating:
http://www.heart.org/HEARTORG/GettingHealthy/NutritionCenter/HealthyEating/Seasonal-Eating_UCM_461322_Article.jsp

Heart Healthy Recipes:
http://www.heart.org/HEARTORG/GettingHealthy/NutritionCenter/Recipes/Heart-Healthy-Recipes_UCM_465114_RecipeLanding.jsp

Eating Healthy When Dining Out:
http://www.heart.org/HEARTORG/GettingHealthy/NutritionCenter/DiningOut/Dining-Out_UCM_304183_SubHomePage.jsp

BOX 7

Drop Your Cholesterol With TLC

You get a lot of benefit from the TLC Program. Here are some estimates of how much you can lower your LDL cholesterol by following various steps in the program. The estimates are what is expected based on research. The more you do with the program, the lower your LDL will go. Further, even if you take a cholesterol-lowering medication, you will still benefit from the program—it will keep the dose down.

	Change	LDL Reduction
Saturated fat	Decrease to less than 7% of calories	8–10%
Dietary cholesterol	Decrease to less than 200 mg/day	3–5%
Weight	Lose 10 pounds if overweight	5–8%
Soluble fiber	Add 5–10 grams/day	3–5%
Plant sterols/stanols	Add 2 grams/day	5–15%
Total		**20–30%***

** Notice that this amount of LDL reduction from TLC compares well with many of the cholesterol-lowering drugs.*

Drop Your Cholesterol With TLC

BOX 22

How to Make Heart Healthy Meals

Eating heart healthy meals doesn't mean giving up on taste. Here are some tips on how to make "health" a special ingredient in your recipes:

Cooking Methods

- Use low-fat methods and remember not to add butter or high-fat sauces—Bake, broil, microwave, roast, steam, poach, lightly stir fry or sauté in cooking spray, small amount of vegetable oil, or reduced sodium broth, grill seafood, chicken, or vegetables.
- Use a nonstick (without added fat) or regular (with small amount of fat) pan.
- Chill soups and stews for several hours and remove congealed fat.
- Limit salt in preparing stews, soups, and other dishes—use spices and herbs to make dishes tasty.

Milk/Cream/Sour Cream

- Cook with low-fat (1-percent fat) or fat-free types of milk or of evaporated milk, instead of whole milk or cream.
- Instead of sour cream, blend 1 cup low-fat, unsalted cottage cheese with 1 tablespoon fat-free milk and 2 tablespoons lemon juice, or substitute fat-free or low-fat sour cream or yogurt.

Spices/Flavorings

- Use a variety of herbs and spices in place of salt (see Box 17 on page 32).
- Use low-sodium bouillon and broths, instead of regular bouillons and broths.
- Use a small amount of skinless smoked turkey breast instead of fatback to lower fat content but keep taste.
- Use skinless chicken thighs, instead of neck bones.

Oils/Butter

- Use cooking oil spray to lower fat and calories.
- Use a small amount of vegetable oil, instead of lard, butter, or other fats that are hard at room temperature.
- In general, diet margarines are not well suited for baking—instead, to cut saturated fat, use regular soft margarine made with vegetable oil.
- Choose margarine that lists liquid vegetable oil as the first ingredient on the food label and is low in saturated fat and low in or free of *trans* fat.

BOX 22 *(continued)*

Eggs

- In baking or cooking, use three egg whites and one egg yolk instead of two whole eggs, or two egg whites or ¼ cup of egg substitute instead of one whole egg.

Meats and Poultry

- Choose a lean cut of meat and remove any visible fat.
- Remove skin from chicken and other poultry before cooking.
- Try replacing beef with turkey in many recipes.

Sandwiches and Salads

- In salads and sandwiches, use fat-free or low-fat dressing, yogurt, or mayonnaise, instead of regular versions.
- To make a salad dressing, use equal parts water and vinegar, and half as much oil.
- Garnish salads with fruits and vegetables.

Soups and Stews

- Remove fat from homemade broths, soups, and stews by preparing them ahead and chilling them. Before reheating the dish, lift off the hardened fat that formed at the surface. If you don't have time to chill the dish, float a few ice cubes on the surface of the warm liquid to harden the fat. Then remove and discard the fat.
- Use cooking spray, water, or stock to sauté onion for flavoring stews, soups, and sauces.

Breads

- To make muffins, quick breads, and biscuits, use no more than 1–2 tablespoons of fat for each cup of flour.
- When making muffins or quick breads, use three ripe, very well-mashed bananas, instead of ½ cup butter or oil. Or substitute a cup of applesauce for a cup of butter, margarine, oil, or shortening—you'll get less saturated fat and fewer calories.

Desserts

- To make a pie crust, use only ½ cup margarine for every 2 cups of flour.
- For chocolate desserts, use 3 tablespoons of cocoa, instead of 1 ounce of baking chocolate. If fat is needed to replace that in chocolate, add 1 tablespoon or less of vegetable oil.
- To make cakes and soft-drop cookies, use no more than 2 tablespoons of fat for each cup of flour.

BOX 13

Learn the Label Language

Food labels should be your new best friends. They'll help you find heart healthy products. Various terms are used—from "free" to "lean." Some terms are used interchangeably—"little," "few," and "low source of" are used to mean "low." Here is a translation of what some of the terms mean—look for these terms when choosing heart healthy items:

Phrase	What It Means
For Fats, Cholesterol, Sodium, and Meat:	
Fat free	Less than 0.5 grams per serving
Low saturated fat	1 gram or less per serving
Low fat	3 grams or less per serving
Reduced fat	At least 25 percent less fat per serving than the regular version
Light (in fat)	Half the fat of the regular version
Low cholesterol	20 milligrams or less per serving, and 2 grams or less of saturated fat per serving
Low sodium	140 milligrams or less per serving
Lean	Less than 10 grams of fat, 4.5 grams or less of saturated fat, and less than 95 milligrams of cholesterol per serving
Extra Lean	Less than 5 grams of fat, less than 2 grams of saturated fat, and less than 95 milligrams of cholesterol per serving
For Calories:	
Calorie free	Less than 5 calories per serving
Low calorie	40 calories or less per serving
Reduced or less calories	At least 25 percent fewer calories per serving than the regular version
Light or lite	Half the fat or a third of the calories of the regular version

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The DASH Diet

Dietary Approaches to Stop Hypertension (DASH) is an eating plan that originally was created to lower blood pressure but also is "heart healthy" and lowers risk of heart attack and stroke. The DASH plan is high in fruits and vegetables, whole grains, low-fat dairy and protein that is low in saturated fat and cholesterol. The plan also focuses on lowering salt intake to less than 2,300 milligrams (mg) per day. Even lower salt intake (1,500 mg per day) can lower blood pressure even more. The DASH eating plan below is based on 2,000 calories per day.

Food Group	Daily Servings	Serving Size	Examples
Grains and starches	6-8	1 slice whole grain bread ½ cup cooked oatmeal ½ whole grain English muffin 1/3 cup brown or wild rice	100% whole wheat bread, 100% whole wheat pasta, Old-fashioned rolled oats, brown rice, barley, sweet potatoes
Vegetables	4-5	1 cup leafy or raw vegetables ½ cup cooked vegetables 6 oz low sodium vegetable juice	Brussel sprouts, green beans, carrots, zucchini, tomatoes, broccoli, bell peppers, cauliflower, spinach, peas, etc.
Fruit	4-5	1 medium fruit 1/2 banana 15 grapes 2 TBSP dried fruit ½ cup fresh or frozen fruit	Berries, melon, apples, oranges, grapefruit, bananas, dried apricots, raisins, peaches, pears, plums, pineapple, mango, prunes, kiwi, etc.
Dairy foods, low-fat or non-fat	2-3	8 oz. (1 cup) milk 1 cup yogurt 1 ½ oz cheese	Skim or 1% milk, Non-fat plain or Greek yogurt, part-skim or low-fat cheeses
Lean meat, poultry, fish	6 oz or less	3 oz cooked meat, chicken, turkey, fish	Round or loin cuts of beef and pork, Skinless poultry Roast, broil or grill meats; remove skin.
Nuts, seeds, dry beans	4-5 weekly	¼ cup or 1 oz nuts 2 Tbsp or ½ oz seeds ½ cup cooked beans	Almonds, pecans, walnuts, peanuts, sunflower seeds, pumpkin seeds, lentils, kidney beans, black beans, chickpeas, etc.
Fats and oils	2-3	1 tsp. tub margarine or butter 1 Tbsp low-fat mayo 2 Tbsp oil-based salad dressing ¼ avocado 10 olives	Olive, peanut, canola oils. Choose spreads and dressings based on these oils.
Sweets	5 weekly	1 Tbsp sugar, jelly, jam or honey 3 pieces hard candy ½ cup non-fat or low-fat frozen yogurt or ice cream 1-2 small cookies 1oz dark chocolate	

Getting Started

1. **Change gradually and focus on small steps to big change.**

2. **Add more fruit and vegetables to your day.**
   - Keep fruits and vegetables on hand. Use frozen, canned, or dried if they are more convenient than fresh. Try ready-to-eat items–pre-peeled carrots, prewashed salad mix, individual-sized cans of fruit.
   - If you now eat one or two vegetables a day, add a serving at lunch and another at dinner to reach 4-5 servings per day.
   - If you don't eat fruit now or only have juice at breakfast, add a serving to your meals or have fruit for a snack or dessert.

3. **Aim for 3 servings of Dairy per day.**
   - Slowly switch to fat-free and low-fat dairy products and work your way to three servings a day.
   - For example, drink milk with lunch or dinner, instead of soda, sugar-sweetened tea, or alcohol.
   - Choose low-fat (1%) or fat-free (skim) milk to reduce your intake of saturated fat, total fat, cholesterol and calories.

4. **Treat meat as one part of the whole meal, instead of the focus.**
   - Limit meat to 6 ounces a day (2 servings). Three ounces of beef, pork and chicken is about the size of a deck of cards.
   - If you are eating more than this, cut the amount of meat gradually–by half or a third at each meal.
   - Include two or more vegetarian-style (meatless) meals each week.
   - Add fruit and vegetables, whole grain rice, pasta and dry beans to meals to get full without lots of meat.
   - Try casseroles and pasta, stir-fry dishes, which have less meat and more vegetables, grains and dry beans.

5. **Shake the salt habit.**
   - Add no salt at the table and use half the usual amount (or less) when cooking or baking.
   - Buy vegetables fresh, plain frozen or canned with "no added salt."
   - Use fresh poultry, fish and lean meats, rather than canned, smoked, cured or processed meats.
   - Be spicy instead of salty. Flavor foods with herbs, spices, lemon, lime, vinegar, or salt-free seasoning blends.
   - Cut back on frozen dinners, pizza, and canned soups/broths or use the reduced sodium varieties.
     When eating out, order foods without sauces and ask that no salt, soy sauce, or other salty seasonings be used.

Sample DASH Menu

Breakfast
- Orange, 1 small
- Oatmeal, 100% rolled oats or steel-cut, 1 cup cooked
- 1% milk, 8 oz (1 cup)
- Walnuts, 2 Tbsp
- Brown sugar, 1 tsp

Lunch
- Chicken salad with 1 Tbsp light mayo, grapes, celery, ¾ cup
- 100% whole wheat pita bread, 1 slice
- Lettuce, 2 leaves
- Carrots, 3-4 sticks
- Celery, 3-4 sticks
- Radishes, 2
- Fruit salad, ½ cup
- 1% milk, 8 oz

Dinner
- Cod, baked 3 oz.
- Brown rice, with scallions, 1 cup
- Broccoli, steamed, ½ cup
- Tomatoes, stewed, ½ cup
- Spinach salad, with
  - raw spinach, ¾ cup
  - sliced mushrooms, 2
  - cucumber, 2 slices
  - bean sprouts, ¼ cup
  - Italian dressing, light, 1 Tbsp.

Snacks
- Apple and string cheese
- 2 Tbsp nuts, 2 Tbsp dried fruit
- 1 cup pea pods, Greek yogurt

Source:
2013 AHA/ACC Guideline on Lifestyle Management to Reduce Cardiovascular Risk: a Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. *Circulation* 2014;129(25):S76-99. http://circ.ahajournals.org/content/early/2013/11/11/01.cir.0000437740.48606.d1

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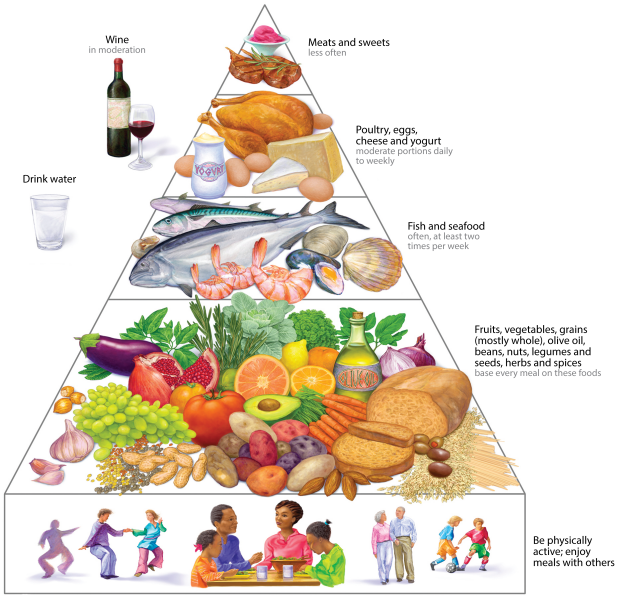
Mediterranean Food Guide



Shen J, et al. 2015.
Annu. Rev. Nutr. 35:425–49

A Mediterranean dietary pattern attempts to copy the eating habits of people who live in the area around the Mediterranean Sea that have traditionally had a low risk of heart disease. Adherence to the Mediterranean diet pattern can improve cardiovascular disease risk factors. A Mediterranean diet when supplemented with olive oil or nuts can decrease heart disease events by almost one-third in people at risk.

The Mediterranean diet contains an abundance of fruit, vegetables, vegetarian proteins, and moderate amounts of whole grains. It contains small amounts of red meat and simple sugars. Regular use of fish, olive oil, and nuts makes this diet higher in fat than the typical "heart healthy diet" recommended by the American Heart Association. However, it mostly contains monounsaturated fat that can be beneficial for the heart. The pyramid above and the charts below describe types and amounts of foods included in a heart healthy Mediterranean diet.

Adequate exercise is very important. Aim for a total of at least 150 minutes per week, spread over 3-5 days per week. Moderate exercise like walking, biking, or swimming is recommended. **Weight Control** also is important. Large portions of food may lead to increased calorie intake and weight gain. If you are trying to lose weight, choose the smaller number of servings in each category, and make sure your serving sizes match those listed.

Table 1. Dietary and Lifestyle components of traditional Mediterranean diet

Dietary Components	
1	High consumption of food from plant sources, including grains, vegetables, fruits, nuts, and seeds
2	Emphasis on a variety of minimally processed and seasonally fresh, locally grown foods
3	Olive oil as the principal dietary fat used for cooking, baking, and flavoring
4	Total fat ranging from 25% to 35% of energy with saturated fat accounting for ≤7% to 8% of energy
5	Daily consumption of low to moderate amounts of dairy products, mainly cheese and yogurt
6	Twice-weekly consumption of low to moderate amounts of fish and poultry; up to seven eggs per week
7	Fresh fruit as the typical dessert, with sweets containing concentrated sugars or honey consumed only a few times per week
8	Consumption of red meat only a few times per month

9	Moderate consumption of wine, normally with meals. Approximately 1–2 glasses per day for men and 1glass for women (optional)
10	Use of herbs and spices to flavor food instead of salt or fat
Lifestyle Components	
1	Regular daily physical activity
2	Meals in the company of friends and family

Food Groups (Number of servings)	**Serving Sizes**
Nonstarchy vegetables (4-8 per day)	*One serving is ½ cup of cooked vegetables or1 cup of raw vegetables* Non-starchy vegetables include artichoke, asparagus, beets, broccoli, Brussels sprouts, cauliflower, cabbage, celery, carrots, tomatoes, eggplant, cucumber, onions, green and wax beans, zucchini, turnips, peppers, salad greens, and mushrooms. Potatoes, corn, and peas are starchy vegetables.
Fruit (2-4 per day)	*One serving is a small fresh fruit or ½ cup juice or¼ cup dried fruit* Fresh fruits are preferred because of the fiber and other nutrients they contain, but fruits canned in light syrup or their own juice, and frozen fruit with little or no added sugar are also good choices. Use only small amounts of fruit juice (8 oz per day or less), since even unsweetened juices contain as much sugar as regular soda.
Legumes and nuts (2-4 per day)	*Legumes One serving is ½ cup cooked kidney, black, garbanzo, pinto, soy, navy beans, split peas, or lentils, or ¼ cup fat free refried beans or baked beans* *Nuts and Seeds One serving is 2 T. sunflower or sesame seeds, 1 T. peanut butter,* *7-8 walnuts or pecans, 20 peanut, or 12-15 almonds* Aim for 1-2 servings of nuts or seeds and 1-2 servings of legumes per day. Legumes are high in fiber, protein, and minerals. Nuts are high in fat, but the fat is mostly unsaturated, and may increase HDL without increasing LDL cholesterol levels.
Low-fat dairy products (1-3 servings/day)	*One serving is 1 cup of skim milk or light yogurt or 1oz of low-fat (part-skim) cheese* Soy milk, soy yogurt, and soy cheese can take the place of dairy products. If servings of dairy or fortified soy are less than 2 per day, a calcium and vitamin D supplement may be recommended.
Fish or shellfish (2-3 times a week)	*One serving is 3 ounces (about the size of a deck of cards)* Prepare fish by baking, sautéing, broiling, roasting, grilling or poaching. Choose fatty fishes like salmon, herring, sardines, or mackerel often. The fat in fish is high in omega-3 fats, so it has healthy effects on triglycerides and blood cells.
Poultry, optional (1-3 times a week)	*One serving is 3 ounces (about the size of a deck of cards)* Bake, sauté, stir-fry, roast or grill the poultry you eat, and eat it without the skin.

Whole grains and starchy vegetables (4-6 per day)	*One serving is one of the following: 1 slice whole wheat bread* *½ cup potatoes, sweet potatoes, corn, and peas* *½ large whole grain bun 1 small whole grain roll* *6-inch whole wheat pita 6 whole grain crackers* *½ cup cooked whole grain cereal (oatmeal, cracked wheat, quinoa)* *½ cup cooked whole wheat pasta, brown rice, or barley* Whole grains are high in fiber and have less effect on blood sugar and triglyceride levels than refined, processed grains like white bread and pasta. Whole grains also keep the stomach full longer, making it easier to control hunger.
Healthy fats (4-6 per day)	*One serving is one of the following: 1 tsp. olive or canola oil 2 tsp light margarine* *1 Tbsp of regular salad dressing 2 Tbsp of light salad dressing, made with oil* *1 tsp regular mayonnaise 1/8 of an avocado* *5 olives (high salt - limit if you have high blood pressure)* These fats are mostly unsaturated and contain little or no trans fat, so they will not increase LDL cholesterol levels. Remember that all fats are a concentrated source of calories, so keep the servings small, as recommended.
Alcohol−No more than one drink per day for women or two drinks per day for men	*One drink equals one 12-ounce beer, 4 ounces of wine, or 1½ ounces liquor (whiskey, vodka, brandy, etc.).* People with high blood pressure or high triglycerides, or those taking certain medications may be advised to avoid alcohol. Ask your doctor to be sure.

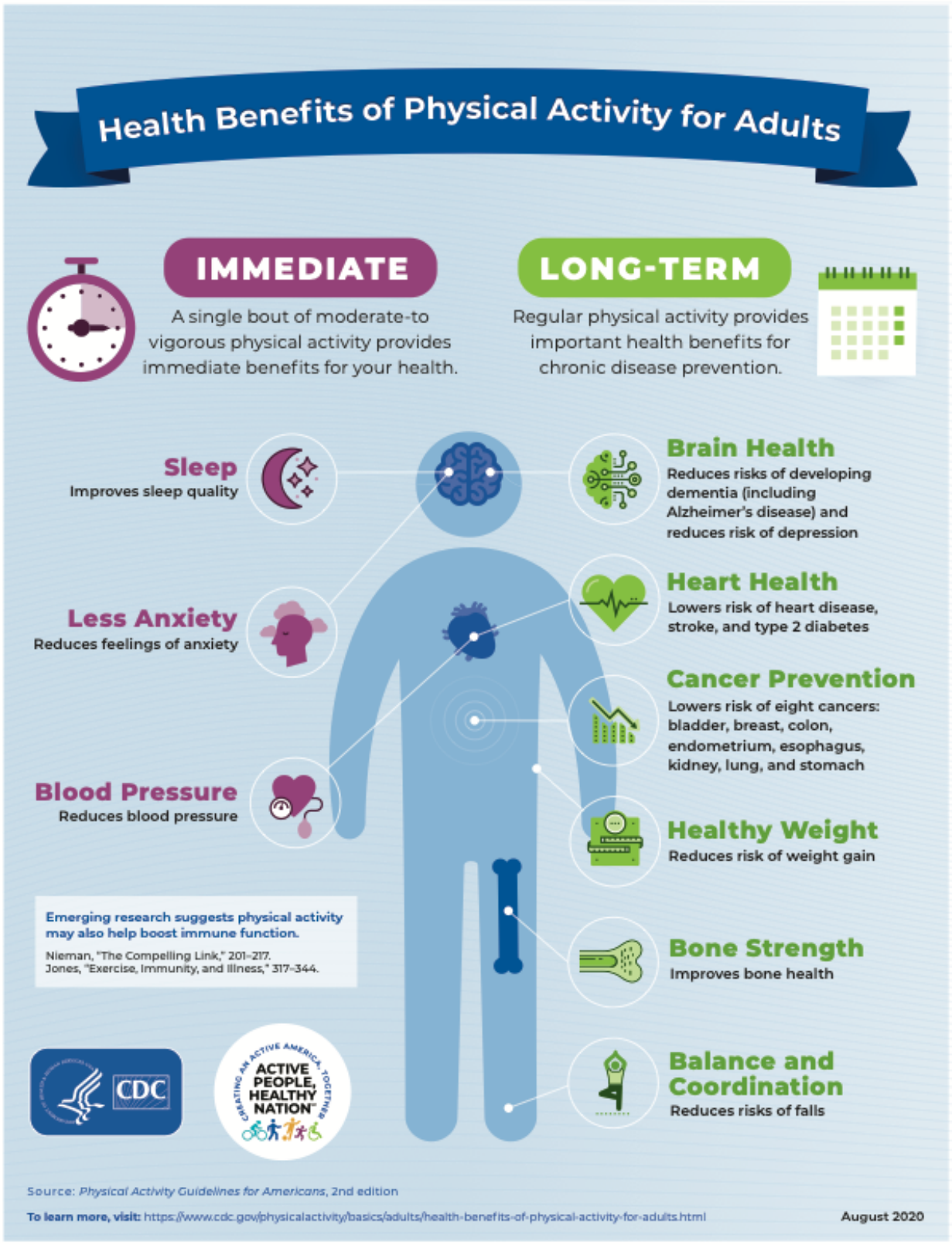
Limit **egg yolks to 4** per week. Egg whites can be eaten in unlimited amounts.
Eat **sweets** infrequently–use fruit as your dessert.
Lean red meats (beef, pork, lamb and veal) can be included 3-4 times per month.

Sources:

Estruch R, et al: Primary prevention of cardiovascular disease with a Mediterranean diet, *New England Journal of Medicine* 2013;368:1279-1290.

Shen J, Wilmot KA, Ghasemzadeh N, Molloy DL, Burkman G, Mekonnen G, Gongora MC, Quyyumi AA, Sperling LS. Mediterranean dietary patterns and cardiovascular health. *Annu Rev Nutr* 2015;35:425-49.

Mediterranean Diet. The American Heart Association. Website: *http://www.heart.org/HEARTORG/GettingHealthy/NutritionCenter/HealthyEating/Mediterranean-Diet_UCM_306004_Article.jsp*. Accessed July 26th 2015


Health Benefits of Physical Activity for Adults
IMMEDIATE
A single bout of moderate-to vigorous physical activity provides immediate benefits for your health.
LONG-TERM
Regular physical activity provides important health benefits for chronic disease prevention.
Sleep
Improves sleep quality
Less Anxiety
Reduces feelings of anxiety
Blood Pressure
Reduces blood pressure
Brain Health
Reduces risks of developing dementia (including Alzheimer's disease) and reduces risk of depression
Heart Health
Lowers risk of heart disease, stroke, and type 2 diabetes
Cancer Prevention
Lowers risk of eight cancers: bladder, breast, colon, endometrium, esophagus, kidney, lung, and stomach
Healthy Weight
Reduces risk of weight gain
Bone Strength
Improves bone health
Balance and Coordination
Reduces risks of falls
Emerging research suggests physical activity may also help boost immune function.
Nieman, "The Compelling Link," 201–217.
Jones, "Exercise, Immunity, and Illness," 317–344.
CDC
ACTIVE PEOPLE, HEALTHY NATION
Source: Physical Activity Guidelines for Americans, 2nd edition
To learn more, visit: https://www.cdc.gov/physicalactivity/basics/adults/health-benefits-of-physical-activity-for-adults.html
August 2020

UW Health HealthDecision™

Making Exercise Part of Your Life

Exercise can...
Help the heart work more efficiently
Increase HDL ("good") cholesterol and lower triglycerides
Lower blood pressure
Reduce blood sugar levels and the risk of developing diabetes mellitus
Help you maintain a healthy body weight
Reduce stress and improve emotional well-being
Reduce the risks of osteoporosis, colon and breast cancer

Which type of exercise should I do? *Aerobic exercise* (also called endurance or "cardiovascular" exercise) should be the foundation of your exercise program. Aerobic exercise involves continuous movement of the major muscle groups (arms, legs), resulting in increased heart rate and breathing rate. Examples are:

- Walking
- Running
- Cycling
- Swimming
- Rowing

Strength training (also called "resistance" exercise) usually involves lifting weights to build muscle strength and size.
Stretching improves muscle flexibility.
A well-rounded exercise program will include all three types of exercise.

How much should I exercise?

- Start with at least 10 minutes at a time, at least 3 times per week.
- Gradually increase to *at least* 150 minutes of moderate intensity aerobic exercise per week. For example, exercise 30 minutes on 5 days of the week. To lose weight, exercise 250-300 minutes per week.
- Shorter sessions can be added together to achieve your daily exercise goal.

How do I get started?
Make a specific plan that includes

- What type of activity you will do
- When you will do it
- Where you will do it
- Why you want to do it

Be realistic, starting with goals that you will be able to achieve.

How hard should I exercise?
Moderate intensity aerobic exercise is encouraged to promote health benefits The Perceived Exertion Rate is a good way to know if you are exercising at the appropriate intensity. Moderate intensity exercise is typically “fairly light” to “somewhat hard” (11-14 on the chart below). Your breathing rate should increase, but not so much that you can’t hold a conversation. If you cannot comfortably hold a conversation, you are exerting yourself

harder than needed to achieve health benefits. Exercising too hard increases the chance of an injury.

Exertion Rating	
9	Very light
10	
11	Fairly light
12	
13	Somewhat hard
14	
15	Hard

Precautions:

- Wear comfortable shoes with supportive arches that will not cause blisters.
- Wear loose fitting, weather-appropriate clothes.
- Drink plenty of water.
- Avoid outdoor exercise on hot and humid days (if temperature of the heat index is above 85 degrees).
- Avoid outdoor exercise when the temperature or wind chill is below zero.
- If you have diabetes melitus, watch for low blood sugar and be prepared to treat it.
- Listen to your body. Symptoms to be aware of include:
  - Chest pain, pressure, or heaviness
  - Excessive shortness of breath
  - Excessive sweating
  - Blurred vision
  - Frequent skipped heart beats
  - Dizziness, lightheadedness
  - Nausea

If you get these feelings, slow down or stop. These symptoms should be reported to your health care provider.

Sample exercise routine

- Warm up with 5 minutes of slow activity
- Perform 10-60 minutes of aerobic activity at a moderate intensity (walking, biking, swimming), 3-7 days per week.
- Cool down with 5 minutes of slow activity, which may include stretching
- Add strength training 3 days per week

Progression–How to add more

- Increase exercise duration by 1-2 minutes to an exercise session each day or week until you are able to exercise 30-60 minutes per day.

- As exercise starts feeling easier (your exertion rate decreases), increase the difficulty by walking faster or up a hill, or by increasing the resistance setting on exercise equipment, even if only for a short period of time. Maintain a moderate level of exercise, as previously described.

Be active throughout the day
Activities of daily living help keep you fit, too.

- Find ways to be more active at home
  - Get up and walk during TV commercials
  - Walk while talking on the phone
  - Rake leaves instead of blowing them
- Add activity at work
  - Park blocks away and walk farther
  - Walk or bike to work
  - Take the stairs instead of the elevator

Sticking with it
Only one-half of people who start an exercise program are still with it after 6 months. Here are tips to keep you active.

- Put it on your calendar–schedule exercise like you would any other appointment
- Keep a record of how many minutes you exercise each week. Or, use a pedometer and make sure you walk at least 10,000 steps each day.
- If you are a social person, find an exercise class that you enjoy, or exercise with friends or family.
- Vary the routine. Get outside for some biking, hiking, canoeing, gardening, or walking–or, go dancing!
- Find a community charity walk or ride that you could "train" to complete.
- Listen to music, watch a movie or talk to a friend while exercising.
- Focus on the positive results of exercise– more energy, less stress, sleeping better, better fitting clothes.

Remember that becoming more active and physically fit requires preparation, prioritizing, and commitment. The improvements in your physical health will be worth the effort!

BOX 26

A Handy Guide to Calories Burned in Common Activities

Activity	Calories Burned Per 30 Minutes*
Walking (leisurely), 2 miles per hour	85
Walking (brisk), 4 miles per hour	170
Gardening	135
Raking leaves	145
Dancing	190
Bicycling (leisurely), 10 miles per hour	205
Swimming laps, medium level	240
Jogging, 5 miles per hour	275

** For a healthy150-pound person. A lighter person burns fewer calories; a heavier person burns more.*

Each of these activities burns approximately 150 calories:

Example of Moderate Amounts of Physical Activity

Common Chores

- Washing and waxing a car for 45–60 minutes
- Washing windows or floors for 45–60 minutes
- Gardening for 30–45 minutes
- Wheeling self in for wheelchair 30–40 minutes
- Pushing a stroller 1½ miles in 30 minutes
- Raking leaves for 30 minutes
- Shoveling snow for 15 minutes
- Stair walking for 15 minutes

Sports Activities

- Playing volleyball for 45–60 minutes
- Playing touch football for 45 minutes
- Walking 1½ miles in 35 minutes (20 minutes/mile)
- Basketball (shooting baskets) for 30 minutes
- Bicycling 5 miles in 30 minutes
- Dancing fast (social) for 30 minutes
- Walking 2 miles in 30 minutes (15 minutes/mile)
- Water aerobics for 30 minutes
- Swimming laps for 20 minutes
- Basketball (playing game) for 15–20 minutes
- Bicycling 4 miles in 15 minutes
- Jumping rope for 15 minutes
- Running 1½ miles in 15 minutes (10 minutes/mile)

Less Vigorous, More Time

More Vigorous, Less Time

My Food Diary

Date: _____

Monday	
Breakfast	
Snack	
Lunch	
Snack	
Dinner	
Snack	

Tuesday	
Breakfast	
Snack	
Lunch	
Snack	
Dinner	
Snack	

Wednesday	
Breakfast	
Snack	
Lunch	
Snack	
Dinner	
Snack	

Thursday	
Breakfast	
Snack	
Lunch	
Snack	
Dinner	
Snack	

Friday	
Breakfast	
Snack	
Lunch	
Snack	
Dinner	
Snack	

Saturday	
Breakfast	
Snack	
Lunch	
Snack	
Dinner	
Snack	

Sunday	
Breakfast	
Snack	
Lunch	
Snack	
Dinner	
Snack	

Notes:

Learn more at https://www.cdc.gov/healthyweight/losing_weight/eating_habits.html

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My Physical Activity Diary

Week: _____ Month: _____

Monday		
Time of Day	Description of Activity (Type and Intensity Level)	Duration

Tuesday		
Time of Day	Description of Activity (Type and Intensity Level)	Duration

Wednesday		
Time of Day	Description of Activity (Type and Intensity Level)	Duration

Thursday		
Time of Day	Description of Activity (Type and Intensity Level)	Duration

Friday		
Time of Day	Description of Activity (Type and Intensity Level)	Duration

Saturday		
Time of Day	Description of Activity (Type and Intensity Level)	Duration

Sunday		
Time of Day	Description of Activity (Type and Intensity Level)	Duration

Notes:

Learn more at https://www.cdc.gov/healthyweight/losing_weight/eating_habits.html

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Mobile Phone App Available Free of Charge

MyFitness Pal

- **Log Food** – Easy-to-use tools make food tracking quick and simple
- **Track Activity** – Add workouts and steps with the fitness tracker
- **Customize Your Goals** – Weight loss, weight gain, weight maintenance, nutrition & fitness
- **See Your Progress** – Track at a glance, or analyze nutrition & calories in detail
- **Learn From a Registered Dietitian** – Meal Plans customized for your target calories, whether you want to lose or gain weight—with access to our Meal Planner tool
- **Stay Inspired** – 500+ healthy recipes and 50 workouts keep routines fresh and fun
- **Connect With Community** – Find friends and motivation in our active forums

- Track calories in over 14 million foods (including restaurant dishes)
- Fast & Easy Food Tracker Tools – Type to search, add foods from your history, or scan a barcode or entire meal with your phone's camera
- Calorie Tracker
- Macro Tracker
- Nutrition Tracker and Insights – Analyze nutrition intake and set specific goals for macros, cholesterol, sodium, fiber & more
- Water Tracker

- Custom Goals – Track calories by meal or day, set up macro goals & more
- Personalized Dashboards – Pick stats you want to see at a glance
- Net Carbs Mode/Carb Tracker – To simplify a low carb or keto diet, view net (not total) carbs
- Protein Counter – Set your protein goals and track how much you eat during the day
- Add Your Own Foods/Meal Tracker – Save recipes and meals for quick logging
- Count Calories From Exercise – Decide how activities affect daily calorie goals
- Connect 50+ Apps & Devices – From fitness tracker and smartwatch apps
- Track With Wear OS – A calorie tracker, water tracker, and macro tracker on your watch face

Fooducate

+ A meal tracker and so much more
+ Track your food intake and exercise
+ Track the quality of calories
+ Track your macros: protein, fats, carbs
+ Scan over 250,000 product barcodes
+ Get a personalized nutrition grade (A, B, C, or D) for each food
+ Get suggestions for healthier foods based on what you scan
+ Free health & diet tips from nutrition professionals
+ Free weight loss tips
+ Motivation, love & support from the community

Fooducate analyzes information found in product nutrition panels and ingredient lists. Scan to discover things manufacturers don't want you to notice:
- added sugars
- artificial sweeteners such as aspartame
- trans fats
- high fructose corn syrup
- MSG
- controversial food colorings
- GMO - genetical modified organisms (premium feature)
- additives and preservatives
- and more...

THE BEST WEIGHT LOSS APP
• 1st prize - US Surgeon General's Healthy App Challenge

PERSONALIZED Experience
- age, gender, weight, height, activity level
- desired weight loss rate
- carb control
- health conditions (low cholesterol, pregnancy,...)
- dietary goals (non processed foods, vegetarian)
- avoid MSG, HFCS, GMOs and other ingredients
- Gluten free and other allergens
(Note: some personalization features require a premium account)

MyPlate

- Browse a comprehensive food database with over 2 million items
- Use our handy bar code scanner to find and track food easily
- Create custom foods and meals
- Get a personalized daily calorie goal based on your profile information
- Keep track of your weight and progress over time
- Review detailed data and create custom daily goals for your nutritional intake of protein, fat, carbs, fiber, sugar, sodium & more
- Easily keep track of your water intake
- Get real-time, 24/7 support from members of our motivational community and others on a similar journey
- Set meal-time reminders to keep you on track
- Integrate with Google Fit app to automatically track daily walking, running and biking activity
- Log workouts from our extensive exercise tracking database
- Create custom exercises or enter calories burned – helpful when using exercise equipment or heart-rate monitors
- Sync with the Calorie Tracker via the LIVESTRONG.COM website at http://www.livestrong.com/myplate/

A daily snapshot of protein, carbs and fat grams and percentages is prominently displayed, making it easy to monitor your macronutrient consumption and manage your desired ratio.

The extensive Progress section includes easy-to-read charts that give you a quick summary of your data including Calories, Weight, Carbs, Protein, Fat and much more. Easily view your progress for the week, or take a deeper dive and view progress over weeks, months and 1 year.

Looking for motivation or advice? Our active community message boards are filled with thousands of members offering each other support and advice, sharing recipes and tips and just sharing a laugh. It's a great place to connect with like-minded people who share similar health and fitness goals.

Check out our FREE companion tool on LIVESTRONG.COM with additional features such as meal plans, workout videos and the latest news and information about healthy eating, exercise ideas and much, much more. And did we mention that's all FREE??

Appendix D

The John Hopkins Nursing Evidence- Based Practice Model Permission

JOHNS HOPKINS EBP MODEL AND TOOLS- PERMISSION

Johns Hopkins Nursing
Center for Evidence-Based Practice

Thank you for your submission.
We are happy to give you permission to use the Johns Hopkins Evidence-Based Practice model and tools in adherence of our legal terms noted below.
No further permission for use is necessary.

- You may not modify the model or the tools without written approval from Johns Hopkins.
- All reference to source forms should include "©The Johns Hopkins Hospital/The Johns Hopkins University."
- The tools may not be used for commercial purposes without special permission.

If interested in commercial use or discussing changes to the tool, please email ijhn@jhmi.edu.

Downloads:

2022 JHEBP Tools- Printable Version

2022 JHEBP Tools- Electronic Version

Would you like to join us? *Group rates available, email ijhn@jhmi.edu to inquire.*

EBP Boot Camp: We are offering a 5-day intensive Boot Camp where you will learn and master the entire EBP process from beginning to end. Take advantage of our retreat-type setting to focus on your project, collaborate with peers, and get the expertise and assistance from our faculty.

EBP Skill Build: This 3-day virtual workshop gives you a front-row seat to our EBP training and provides every participant with the guidance and support they need to get their EBP projects started.

Go back to the form

Appendix E

Table 2.2

Evidence Table

Lead Author/ Year/Quality	Purpose/ Design/Sample	Interventions	Measurement/ Outcomes	Results/ Findings	Strengths/ Limitations
Level I Evidence					
Grundy et al. (2019) AGREE II: High quality	**Purpose:** To reduce risk of atherosclerotic cardiovascular disease through cholesterol management and address the practical management of patients with high blood cholesterol **Design:** Clinical Practice Guideline **Sample:** Mainly RCTs from 1980-2017	Interventions of interest included those that lower LDL and ASCVD risk. Smoking Cessation Weight Loss promotion Physical Activity (3-4 40 min sessions a week) Diet control (increase fruits/vegetables, low-fat dairy, low fat poultry, whole grains) (limit sweets, red meats, calories) - Incorporate cultural preferences/practice	Lipid Profiles LDL-C levels ASCVD risk CAC score	**Recommendations:** In all individuals, emphasize a heart-healthy lifestyle across the life course (p. e1083) Assess adherence and percentage response to LDL lowering medications and lifestyle changes with repeat lipid measurement 4 to 12 weeks after statin initiation or dose adjustment, repeated. Every 3 to 12 months as needed. (p. e 1084) Eight additional recommendations are given in regards to medication therapies	**Strengths:** The guideline is written by a reputable organization and is very thorough. It covers many aspects of ASCVD risk. It offers options, and is tailored to the patient with shared decision making, on how to accomplish its recommendations and is written based on EBP. **Limitations:** There is great focus on

		Decreasing Alcohol Consumption Satins Non-Statin Lipid Lowering Agents Non-statins add-on drugs to statin therapies		and CAC scores to support medication therapies, but were not the focus within this review. (p. e1083-e1084). "Priority should be given to estimation of lifetime risk and promotion of lifestyle risk reduction" in regards to primary prevention of dyslipidemia (p. e1099)	pharmacology in this guideline. It is also lengthy and requires a great deal of time to read.
DynaMed (2022) AGREE II: High quality	**Purpose:** to provide best management strategies of a range of lipid abnormalities **Design:** Clinical Practice Guideline **Sample:** previous CPGs, RCTs, meta-analyses, and cohort studies	Interventions of interest included those that lower LDL, TCs, and ASCVD risk. Cardioprotective diet: DASH diet, Portfolio diet, and Mediterranean diet Smoking Cessation Weight loss Progressive resistance training Statin Therapy	Lipid Panel ASCVD Risk LDL Levels SCORE risk CAC score	**Primary Prevention Recommendations:** Early intervention with lifestyle modification to manage ASCVD risk - Assess risk using a PCE (pooled cohort equation) Advise adults to engage in aerobic physical activity for 40 min, 3-4 times a week Emphasize eating vegetables, fruits and whole grains. Reduce sugars, sweets, saturated fats, sodium, trans fat, carbohydrates Alcohol in moderation	**Strengths:** The guideline is written by a reputable organization and is very thorough. It covers many aspects of ASCVD risk. It offers options, including many screening tools and covers many other CPGs. It compares those CPGs and offers recommendations based off of age and risk factors. **Limitations:** There is great emphasis on pharmacology

				-<2 drinks a day for men - <1 a day for women Additional recommendations were given in regards to statin therapies, non-statin therapies and supplements but were not the focus of this review	and is very lengthy. It takes a significant amount of time to read through and understand what the recommendations are telling the reader.
Gorina et al. (2018) John Hopkins: Good quality	**Purpose:** to evaluate the effectiveness of primary care educational interventions undertaken by nurses to improve the health of patients through metabolic control and/or chronic disease management, including hypercholesterolemia **Design:** Systematic Review without meta-analyses **Sample:** 20 RCTs between 2000-2015	Educational interventions for health promotion, in a primary care setting, for chronic disease management that were led by nursing staff. Educational sessions: Eight studies used group sessions Two studies used group and individual sessions combined Five studies used individual sessions Nine studies used telephone contact One study with family sessions	Objectives were improvement of chronic disease management, boosting self-control and self-care, and increasing knowledge (Or a combination of the three) LDL (6 studies) Diet Physical Activity Medication Adherence SBP/DBP Hgb A1C HDL	Significant benefits can be seen for physical activity in tailored intervention groups based on 2 studies and one study with significance via phone contact. (*RR* = 1.93) and ($p < 0.01$). 3 studies with significant reduction in LDL with tailored group interventions compared to control groups. (*RR* = 1.82) ($p < 0.01$) and ($p < 0.01$). One study with LDLs did not show a *p* value. Two telephone intervention studies did not show significance for LDLs ($p = 0.61$).	**Strengths:** This review focuses on self-care and control for chronic disease, which can help focus in on CVD. It also outlines different ways to go about interventions for implementation, **Limitations:** The exact education and types of interventions are unclear, and some of the studies lack *p* values. Also, there was a lot of information tailored to chronic

			Waist Circumference BMI Drug/Alcohol use TG	6 of the 15 studies that achieved positive changes used a combined approach to education between individual, group and telephone contact. - Five positive outcomes were carried out in groups - Two were face-to-face - Two were telephone contact	diseases in general, not just LDL. Also, there is limited data on the longevity of these outcomes.
Karmali et al. (2017) John Hopkins: High quality	**Purpose:** to assess the effects of evaluating and providing CVD risk scores in adults without prevalent CVD on cardiovascular outcomes, risk factor levels, preventive medication prescribing and health behaviors. **Design:** Systematic Review **Sample:** 41 RCTs with 194,035 participants.	Using pooled cohort equations to interpret ASCVD risk and using it as a basis of education. Co-interventions: clinician-facing decision support, patient-facing decision support, EMR integration, patient education material, academic detailing, audit-feedback, electronic or paper reminders, nurse counseling	Screening Rates Preventative Treatment discussions Guideline Adherence Risk factor targets ASCVD risk LDL Smoking Diet Physical Activity Medication Adherence	Three RCTs reported effects on CVD events. (*RR* = 1.01) when providing a risk score, no significance. Providing a CVD risk score may increase smoking cessation compared with usual care *(RR* = 1.38) (p. 19) Two studies demonstrated no evidence that providing a CVD risk score had an effect on self-reported physical activity compared with usual care (*RR* = 0.98)(p. 19). One RCT reported an increase in the number of days with physical activity > 30 minutes	**Strengths:** This review included a large sample size and covered many aspects of CVD. It offers many great tools to consider with EBP implementation. It's literature search appears rigorous and offers a high-quality appraisal. **Limitations:** The results do not appear significant in many areas of this topic and the

			Adverse Events	(3.7 days in intervention versus 2.4 days in control; $p = 0.002$) (p.19). Two studies reported improvements in heart-healthy diets after providing a CVD risk score (24.3% versus 11.6%, $p < 0.001$). One study showed nutritional level was higher in the CVD risk score group compared with the usual care group ($p < 0.01$). Four studies reported no difference in healthy dietary patterns between the two groups (p.20). 12 RCTs reported effects on LDL and total cholesterol. Many of the trials identified in this review reported on achievement of guideline-recommended cholesterol goals after provision of a CVD risk score.	results are pretty variable. Some of the data was unable to be analyzed due to the differing country goals for cholesterol that were included in the review. The authors identify high risk of bias across all studies.
Mbinji (2021)	**Purpose:** To find the best available evidence regarding lifestyle interventions for the primary and secondary prevention of	Interventions aimed at controlling modifiable risk factors for CVD.	Diet and nutrition SBP/DBP TC	**Recommendations:** Multi-faceted lifestyle interventions focusing on dietary, behavioral, exercise, smoke cessation, and	**Strengths:** The evidence summary contains a strong literature review with a large

John Hopkins: High quality	cardiovascular disease in adults at risk for cardiovascular disease **Design:** Evidence Summary **Sample:** 5 systematic reviews totaling 110 RCTs	Multifactorial lifestyle modification programs. - Educational, psychological, dietary, organizational, exercise Smoking Cessation Mediterranean Diet Exercise Programs Self-regulation - Goal setting, self-monitoring, planning, and feedback	Smoking Lifestyle Behaviors Exercise Behaviors Lipid Levels	psychological aspects should be considered for primary and secondary prevention of CVD (p. 2).	sample and high levels of evidence. The appraisal is strong. **Limitations:** This summary focuses on all aspects of CVD, and the appropriate interventions have to be searched for. There is limited knowledge given on the interventions in the actual summary and some citation chasing is needed.
Moola (2020) John Hopkins: High quality	**Purpose:** to find the best evidence for the community-based interventions for primary prevention of cardiovascular disease in adults with or without risk factors for CVD **Design:** Evidence Summary **Sample:**	Interventions aimed at addressing risk factors such as smoking, physical inactivity, obesity, elevated cholesterol, hypertension and diabetes	CVD mortality ASCVD risk reduction Risk Factor improvements Eating habits Physical Activity levels	**Recommendations:** Community Interventions such as a combination of media, screening, counseling activities and environmental change with modification to conform with current circumstances, should be considered as an approach for achieving a reduction in overall	**Strengths:** The evidence summary contains a strong literature review with a large sample and wide variety of evidence. The appraisal is strong. **Limitations:**

	3 systematic reviews, 1 RCT, 1 cluster-RCT, 1 non-RCT, 1 cohort study, 1 quasi-experimental study, and 1 community-based intervention study		Medication Adherence LDL SBP/DBP	CVD risk (Grade B) (p. 3). Community Interventions such as health education through media and through educating patients, training of healthcare providers, implementing treatment guidelines and lifestyle counseling should be used for reducing CVD risks such as lifestyle or behavior changes on diet, smoking and alcohol and control of blood pressure, and blood glucose level and weight (Grade B) (p. 3). Further long-term high-quality studies are needed to confirm the sustainability of behavioral improvement and its impact on long term CVD risk factor (Grade A) (p. 3).	This summary focuses on all aspects of CVD, and the appropriate interventions have to be searched for. There are also some lower-level evidence included in this review.
Porritt (2021) John Hopkins:	**Purpose:** to find the best evidence regarding how to undertake a cardiovascular disease risk assessment in	Interventions for assessing CVD risk. ASCVD risk estimator tools (pooled cohort equations).	Calculated ASCVD risk	**Recommendations:** Adults aged between 20-30 years should have CVD risk factors evaluated every 4-6 years (Grade X) (p. 2)	**Strengths:** This summary is based on CPGs and resembles strong quality appraisal. It is

High quality	adults for the primary prevention of CVD **Design:** Evidence Summary **Sample:** CPGs	Systematic Coronary Risk Evaluation (SCORE) and Framingham risk equation		Adults aged between 40-75 should routinely have CVD risk factors evaluated and a 10-year risk of CVD assessment (Grade A) (p. 2) A validated tool should be used to estimate CVD risk (Grade A) (p. 2) A comprehensive clinical history should be undertaken as part of the CVD risk assessment and may include blood pressure, measurement of waist circumference and calculation of BMI, measurement of serum lipids, plasma glucose, renal function and left ventricular hypertrophy (Grade B) (p. 2)	easy to follow and interpret. **Limitations:** The summary does not cover anything other than risk assessment and does not confirm what tool is best to use.
Ross et al. (2019) John Hopkins: High quality	**Purpose:** to evaluate the effectiveness of face-to-face dietetic consultation for lowering blood lipid concentrations in high-risk individuals in primary health-care settings	Face-to-face consultations with a dietician for education versus dietary and written advice from physicians and nurses	Lipid Panel BMI	**Recommendations:** Low quality GRADE was given to dietician consultations versus comparable groups. Dietician counseling was found to be more effective for lowering TG while reductions in	**Strengths:** This review offered minimal bias with high levels of evidence. It also focused solely on Lipid panels affecting CVD.

	Design: Systematic Review and Meta-Analysis **Sample:** 10 RCTs, with 7 included in meta-analysis			cholesterol concentrations were similar to comparable (control) groups. TG lowering with dietician compared to control (p = 0.03) LDL lowering with dietician compared to control (p = 0.54) TC lowering with dietician compared to control (p = 0.16) HDL lowering with dietician compared to control (p = 0.16)	**Limitations:** All the studies differed in timing of post intervention follow-up. Also, there was some reporting bias and variations in reporting methods.
USPSTF (2020) John Hopkins: High quality	**Purpose:** to update the 2014 recommendation for CVD prevention in adults with cardiovascular risk factors **Design:** Systematic Review **Sample:** 94 RCTs	Face-to-face counseling sessions, either individual or in a group. Median time spent- 6 hours over 12 months with a median number of 12 contacts. With or without web-based technology or telephone visits.	Cardiovascular events (MI, stroke, PAD) SBP/DBP LDL-C TC Weight Waist Circumference	**Recommendation:** Offer or refer adults, 18 years and older, with cardiovascular disease risk factors to behavioral counseling interventions to promote health diet and physical activity (GRADE B) (p. 2069) Assess risk for CVD using a PCE or Framingham risk score (p. 2070)	**Strengths:** This is a reputable source with high quality appraisal. The recommendation is easy to read and straight forward. It does not include information on pharmaceuticals. **Limitations:** The individual studies are not listed to review the data, bias is not

					mentioned or reviewed.
Level II Evidence					
Gonzalez-Sanchez et al. (2019) John Hopkins: High quality	**Purpose:** to assess the effect on cardiovascular risk factors by adding the use of smartphone app to an intervention for lifestyle improvement consisting of standard counseling and the Mediterranean diet **Design:** RCT **Sample:** 833 subjects, with attrition = 715	415 subjects were randomized to an intervention group that consisted of counseling and the use of smartphone app for 3 months. The app assisted in facilitating changes to dietary habits and physical activity. 418 were randomized to a control group with just the counseling.	SBP/DBP LDL Lipid Panel ASCVD risk Medication consumption A1C BG	There are no statistically significant changes observed between the groups at 3 months or 12 months. Control group was favored at 12 months for SBP (2.02 mmHg), DBP (1.21 mmHg), TC (5.24 mg/dl), TG (7.24 mg/dl) ASCVD risk decreased similarly in both groups for 3 months (-0.49 IG and -0.56 in CG), but only maintained in the CG at 12 months (-0.55). Consumption of meds for BP and lipid-lowering increased at 12 months' time for CG ($p < 0.05$) but was not the case for IG ($p > 0.05$).	**Strengths:** This RCT includes the changes in medication consumption whereas other RCTs in the past do not, which can help show differences in outcomes. The appraisal is also strong and the study is easy to follow. **Limitations:** There was a lack of blinding due to the nature of the study. This could have affected individual motivation. There was also a great deal of attrition.
Level VI Evidence					

Lidin et al. (2018) John Hopkins: High quality	**Purpose:** to investigate the effects on cardiovascular risk factors and cardiovascular risk after 6 months and 1 year, in individuals with increased cardiovascular risk enrolled in a lifestyle multidisciplinary program in a clinical setting **Design:** Prospective observational single study **Sample:** 100 individuals 18 years and older with CVD risk factors	The intervention was a structured lifestyle program consisting of an individual visit at baseline, 6 months, and one year. This visit was a health check up with motivational techniques for behavioral change. They received a personalized prescription for physical activity and a pedometer. They were also invited to five educational group sessions and offered free web-based lifestyle courses.	Height, Weight, BMI Waist circumference SBP/DBP Lipid Panel Lifestyle Habits ASCVD risk	Cardiovascular risk decreased by 15% over one year in total and is statistically significant *(*< 0.001) Both SBP and DBP decreased by 19% over a one-year period and were statistically different. LDL decreased by 10% over one year and by 14% in 6 months. TC decreased by 6% over one year. Improved quality of life and lifestyle habits with diet and exercise were reported. Waist circumference and BMI remained relatively the same.	**Strengths:** The quality of this study's search and data is high. There was also high attendance with minimal attrition. **Limitations:** This is a single study with lower level of evidence and less participants. The generalizability could also be in question due to the motivation level of the participants.

Appendix F

Data Collection Form

Patient Data Collection

Patient #_____

Age:_____

Gender:_____

Ethnicity:_____

Date of initial visit:_____

Date of 5-week follow-up: _____ completed? _____

Date of 10-week follow-up: _____ completed? _____

	Initial Visit	10-week follow up
Weight (lb.)		
BMI (%)		
Blood Pressure (mmHg)		
LDL Level (mg/dL)		
ASCVD %		
Medications		
Comorbidities		
Mobile Phone Usage		
RYP score		
RAPA score		

Appendix G

Informed Consent

INFORMED CONSENT

Project Title: The Effect of Implementing an Educational Intervention for Elevated LDL Levels

Project Manager: Blake Hansen, BSN, RN, DNP Student, Valparaiso University College of Nursing and Health Professions

Purpose: I, _____ (please print), understand that I am being asked to participate in an evidence-based practice project that will evaluate the effect of lifestyle modification education for elevated cholesterol in patients with hyperlipidemia.

Procedure: By signing the informed consent, I agree to participate in the evidence-based practice project in which I have been deemed eligible due to a recently drawn LDL level greater than 100 mg/dl. I understand my participation includes completing a rapid physical activity assessment questionnaire, a dietary habit questionnaire, and a behavioral counseling session with the nurse practitioner. I understand this 20-minute behavioral counseling session will address my current lifestyle habits, with regards to diet and physical activity, and aims to make the appropriate changes to those in order to decrease my LDL levels. I understand that I will be asked to schedule two follow-up behavioral counseling sessions. One session being a 20-minute telephone consult after 5-weeks-time, and another 20-minute in-person consult after 10-weeks. During the last counseling session, I agree to have my blood drawn to recheck my lipid panel/LDL level, as well as repeating the rapid physical activity assessment questionnaire and dietary habit questionnaire. I understand that my nurse practitioner will order the laboratory blood test, in which I will incur no additional charges, and that my nurse practitioner supports dietary and physical activity changes to help manage my hyperlipidemia. I understand that my weight, height, body mass index, blood pressure, drug and alcohol usage, medications, medical history, and previous laboratory results will be gathered from my chart and included as data in the project. I understand that my nurse practitioner will also use this data to calculate my 10-year cardiovascular disease risk percentage and use this risk percent to guide my treatment and counseling based on published clinical practice guidelines. Lastly, I understand my demographic information, including my age, gender, and ethnicity will be gathered from my chart and included as data in the project.

Risks: The potential risks to participating in the project are minimal. As part of routine care, I will have my labs drawn using a small needle that may leave my arm sore at the insertion site for a few hours to a couple of days. I also understand that changes to my diet or physical activity levels may cause headache, fatigue, nausea, constipation, irritability, and dizziness. In saying this, I understand that this an individualized, self-management approach to modifying my habits, and I should only perform dietary and physical activity changes that I deem tolerable for myself. The counseling session is offered to make suggestions in lifestyle changes, but it will be up to me to deem what is tolerable. I understand that my nurse practitioner is in agreement with the lifestyle recommendations and does not view this project as a risk to my health, nor will it affect the routine care I am already provided.

Benefits: There are many expected benefits from participating in this evidence-based practice project. The educational intervention will help me make healthier dietary choices, to stay motivated and be physically active, and to understand my risk for developing cardiovascular disease. I understand these counseling recommendations may help me lose weight, lower my LDL level, improve my cholesterol levels, have more energy, lower my blood pressure, and possibly decrease the dose or number of medications I take. The expected benefits listed may

help to reduce or lessen the burdens of hyperlipidemia in the future including heart attack, stroke, or death. Additional benefits will include receiving an educational packet on the discussed lifestyle recommendations, and understanding new ways to self-monitor and self-regulate lifestyle habits.

Payment for Participation: I understand that I will not be paid for my participation in the project, but I will receive free handouts and updated knowledge on cholesterol and cardiovascular disease.

Additional Costs: I understand that there will be no additional costs to me for participating in this project. My current visit, follow-up visits, and laboratory tests will be covered by the wellness clinic.

Voluntary Participation/Withdrawal: I understand that my participation in the project is my personal choice, and I am free to stop participating at any time without penalty. My future visits with my nurse practitioner will not be impacted if I wish to not complete the project at any time during the 10-week implementation period.

Questions: If I have any questions about the project now or in the future, Blake Hansen (project manager) may be contacted at any time 317-797-2012 or through her email address blake.hansen@valpo.edu.

Confidentiality/Anonymity: Although my personal information and answers that I give on the questionnaires may be used and reported by the project manager, my name and facts that would identify me personally will be kept strictly confidential. I understand that all data will be reported in aggregate or group form. I have been assured of my anonymity or privacy in the reporting of data.

Consent to Participate in Project Study: I have read or had read to me all of the above information about this project, the procedure, possible risks, and potential benefits to participating in the project, and I understand them. All of my questions have been answered. I give my consent freely and agree to participate.

Participant's Signature Date

_____ _____

Project Manager's Signature Date

_____ _____

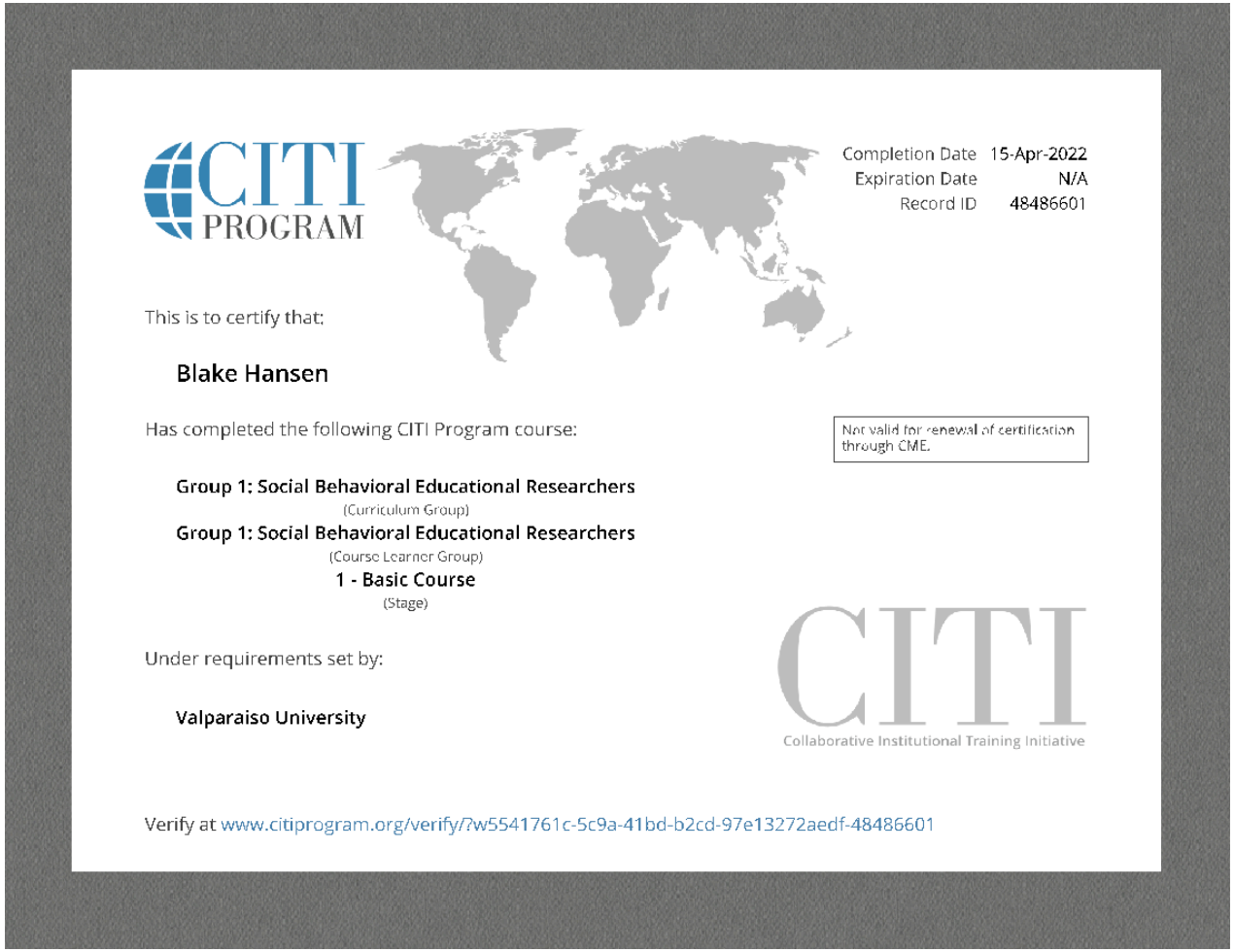
Appendix H

EMR Provider Template

edit | delete	.ebpproject	bhansen53 (owner)	ASCVD risk score percentage: Behavioral Counseling was completed to discuss this risk score and lifestyle modifications to lower cholesterol/LDL levels. Educational handouts were used and sent home with the patient to support this counseling. Patient set three goals to monitor their progress: 1. 2. 3. Two follow up appointments were requested to re-address this counseling and the appropriate lifestyle modifications. There are no further questions at this time. LDL levels will be re-evaluated in 10 weeks' time.

Appendix I

CITI Program Verification Certificate



CITI PROGRAM

Completion Date 15-Apr-2022
Expiration Date N/A
Record ID 48486601

This is to certify that:

Blake Hansen

Has completed the following CITI Program course:

Not valid for renewal of certification through CME.

Group 1: Social Behavioral Educational Researchers
(Curriculum Group)
Group 1: Social Behavioral Educational Researchers
(Course Learner Group)
1 - Basic Course
(Stage)

Under requirements set by:

Valparaiso University

CITI
Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?w5541761c-5c9a-41bd-b2cd-97e13272aedf-48486601