

Strategies for Lifestyle Medicine Center Engagement for an  
Employee Population with Diabetes or Prediabetes

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### Abstract

Type 2 diabetes is a costly chronic condition with significant health implications of uncontrolled. Prediabetes is a harmful chronic condition waiting to happen. The increased number of people with type 2 diabetes and prediabetes is growing globally, nationally, and locally. At a local level, there is a great concern for the cost of the employee population with diabetes or prediabetes at a health care organization in NC. The predicted cost of diabetes to the employer is approximately \$17 million in five years based on a health risk assessment, biometrics, and health questionnaire. Decreasing modifiable risk factors could potentially reduce this cost by approximately \$15 million if employees were able to improve their health risk assessment score by making lifestyle changes. Engaging employees with the Lifestyle Medicine Center and interventions as an employee benefit for modifying risk factors related to type 2 diabetes has the potential for massive health care cost savings. Identifying and connecting high-risk employees with diabetes or prediabetes to the Lifestyle Medicine Center and resources has the potential to prevent or manage diabetes and decrease employer costs for employee health care.

*Key words:* Cost Savings, Diabetes, Prediabetes, Prevention, Management, Lifestyle Medicine, Employee Based Population, Employer

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## **Chapter One: Overview of the Problem of Interest**

Diabetes, among other chronic conditions, is a non-communicable disease of growing health concern at an employee, employer, state, national, and global level. The increasing cost of care and management for people with type 2 diabetes (T2D), their employers, and the nation puts added strain on budgets and health care dollars. There are grave concerns and focus on health care to change the view and management of chronic conditions. These chronic conditions could potentially be prevented, managed, or reversed with lifestyle changes.

T2D can be a preventable chronic condition with the utilization of lifestyle medicine practices. Readiness to change improves the likelihood of making long-term healthy habits. A supportive health care team aids empowerment and guides employees towards a stronger life transformation.

Lifestyle medicine practice has been around for years. Incorporating a balance of healthier eating, being active, improved sleep habits, avoiding tobacco, and limiting alcohol intake can be effective measures in preventing or managing T2D without the use of medications. The goal of this project was to assess the recruitment process of engaging employees with prediabetes or T2D into the Lifestyle Medicine Center (LMC) services and programs provided by their employer.

### **Background Information**

The National Diabetes Statistics Report of 2020, from the Centers for Disease Control and Prevention (CDC, 2020) reports that in 2018, the number of people living with diabetes has reached 34.2 million people in the United States (US), estimating 10.5% of the nation's population has diabetes (CDC, 2020). Of the total number of people with diabetes, 26.9 million are diagnosed, and 7.3 million are undiagnosed (CDC, 2020). In the same report, prediabetes

impacts 88 million adults (34.5%) of the US adult population (CDC, 2020). The Doctor of Nursing Practice (DNP) project's health care organization has approximately 14,000 employees. Based on the national rates of diabetes approximately, 1,470 employees with diabetes (type 1 and type 2) and 4,800 with prediabetes. People with prediabetes are at higher risk for developing a heart attack, stroke, or T2D within five years if there are no lifestyle changes made (CDC, 2020). The National Diabetes Prevention Program focuses on lifestyle changes that include healthy eating, increased activity, and weight reduction in group classes that span over a year with successful outcomes (CDC, 2019).

Lifestyle interventions with health coaching programs for weight loss, smoking cessation, diabetes, and hypertension self-management have been a part of the employee wellness culture at the health care system for more than 20 years. The services were free to employees and their dependents on their insurance plan. The "employee wellness programs" included free health coaching, a pharmacy benefit with free medications, and certain supplies for chronic conditions like asthma, diabetes, hypertension, and hyperlipidemia. Lifestyle medicine interventions may play a role in the well-being of the employees and the health and financial condition of the health care organization. Lifestyle coaching services were usually under-utilized.

The LMC was a new innovative approach to encompass employee wellness at a variety of levels with a multi-team approach to employee care at a large health care system. One goal was to assist employees with chronic conditions to improve positive health outcomes and reverse the management of medications. Cefalu et al. (2016) reported that although lifestyle medicine interventions are effective, the challenge for individual adherence to physical activity and food choices would not be the solution for the majority of at risk individuals. The LMC team could

help employees to understand, appreciate, and embrace the impact of making small incremental changes in lifestyle to promote overall health improvement and remain engaged.

Diabetes is a condition that develops when the body is not able to utilize the hormone insulin from the pancreas to direct glucose into the cells creating elevated glucose levels in the body (National Institute of Health [NIH], 2017). According to the NIH (2017), the body either does not produce insulin (type 1 diabetes) or does not produce enough insulin (type 2 diabetes). According to the American Diabetes Association (ADA, 2019), type 1 diabetes (T1D) requires insulin along with lifestyle modification, and type 2 diabetes (T2D) requires changes to lifestyle and possibly oral or injectable medications for diabetes depending on the course of the disease. T2D represents 90-95% of the diabetes population (CDC, 2019). Chronic conditions like T2D can be prevented and managed with lifestyle changes and modifications. Lifestyle modifying behaviors can be challenging without appropriate support. According to the American College of Lifestyle Medicine (ACLM, 2019), healthy lifestyle habits can be as effective as medications for chronic conditions like T2D when presented by providers with a collaborative, patient-centered approach. Arena et al. (2015) note that living a life with healthy choices and behaviors has the potential to prevent, manage, and reverse chronic conditions.

Diabetes is an arduous chronic condition to the person with diabetes and their family from an emotional and financial aspect. The burden of diabetes impacts more than the person living with diabetes. The cost and effect of diabetes impacts families, friends, community members, employees, employers, economic wealth, and health care spending dollars (ADA, 2018). The ADA in 2017, attributes an estimated \$327 billion to the cost of diabetes diagnosis, \$237 billion for direct medical costs, and \$90 billion towards reduced productivity. The care for people with diabetes utilizes one out of every four health care dollars spent in the US, with 50%

of that cost directly related to diabetes (ADA, 2018). People living with diabetes have an annual estimated average medical cost of \$16,750, with \$9,600 towards diabetes (ADA, 2018).

According to ADA (2018), other costs that impact employers and health care dollars are indirect costs like absenteeism (\$3.3 billion), reduced productivity related to work (\$26.9 billion), and the reduced the productivity of those not working (\$2.3 billion).

Disability-related to inability to work due to diabetes-related issues (\$37.5 billion) and lost productivity due to diabetes-related premature deaths (\$19.9 billion) also impact indirect costs (ADA, 2018). According to Davies et al. (2018), lifestyle changes were considered the first line of care for the treatment and management of people newly diagnosed with T2D along with the drug metformin. A landmark study conducted by Knowler et al. (2002) found that a randomized clinical trial reduced the incidence of T2D with lifestyle interventions for one year. The study demonstrated that significant changes to lifestyle habits and behavioral modification were more effective than the medication, metformin.

Chronic conditions and premature deaths were reduced by 80% when lifestyle medicine, practice, and change were implemented to the fullest with one's health care provider (HCP), according to Mechanick and Kushner (2016). Implementing and promoting the LMC services to support its employees in gaining optimal health was an added employee benefit. An interdisciplinary team approach with integrated aspects of wellness could potentially improve the health care status of employees, their dependents, the healthcare organization, and the community it serves.

### **Significance of Clinical Problem**

Diabetes is a costly chronic condition that impacts multiple levels of personal care and the health care organization directly and indirectly. From the annual health risk assessment

(HRA) data for 2018, 9% of the employee population has diabetes. This HRA was unable to distinguish between T1D and T2D in the report. Diabetes ranks as one of the top four chronic conditions in the health care system, along with hyperlipidemia, hypertension, and obesity. Modifiable factors that impact the top four conditions are healthier eating habits, active lifestyle, stress management, and smoking cessation. The health care organization in eastern North Carolina (ENC) was concerned with population health management for its employees and interested in focusing on specific interventions that addressed the employee's needs for health promotion, wellness, care coordination, and case management.

The LMC approach provided an adjunct to care with an innovative tactic to health care delivery for diabetes prevention and management among the employee population. Lifestyle medicine had the potential to improve the health and well-being of the healthcare system's employee population in ENC. The employees needed to be ready for a change supported by the LMC team. Improved outcomes to diabetes prevention and management through the LMC's services has huge potential for cost savings to the health care system and the employee population. The climate of health care is evolving and morphing towards incorporating new technology, advances to treatment, and personalized touch in primary care with the use of non-pharmacological approaches versus medications. Lifestyle medicine utilizes the basics of health and wellness at the core of its principles that could be considered cost savings for health care dollars and population health investment. The LMC could be a model for care to an employee population that has the potential to expand out into the community it serves. Lifestyle medicine center approaches could potentially lead to impacting social determinants of health. The increased use of the LMC could potentially prevent or reverse chronic conditions, decrease the

use of medications, decrease emergency room (ER) visits, hospital stays, and lighten the financial burden on the health care system.

The Office of Disease Prevention and Health Promotion (ODPHP, 2019) laid out the platform for Healthy People 2020, addressing leading health indicators that impacted the health and well-being of the nation with a set of topics and objectives. The proposed project with the LMC services had the potential to impact six of the twelve leading health indicators of Healthy People 2020 (Clinical Preventive Services, Nutrition, Physical Activity, and Obesity, Reproductive Health, and Tobacco). There would be a focus on nutrition, physical activity, and obesity, along with several topic areas with the main topic of interest being diabetes (ODPHP, 2019).

The Quadruple Aim consisted of employee well-being, population health, care team well-being, and cost reduction that worked collectively to enhance aspects of health care that could enrich people, communities, and organizations (Institute for Healthcare Improvement [IHI], 2019). The implementation of strategies that informed, educated, and connected employees to the LMC opened opportunities to decrease health care expenditures, improve return on investment, job satisfaction for providers, and patient satisfaction. People engaged in their health care, knowing they have support and encouragement from their providers, are empowered to work towards making healthier lifestyle choices and changes when they are ready. The collaboration with community partners and paying attention to the Community Health Assessment Needs (CHAN, 2019) for the county could lead to better relationship building. Partnerships within the community could lead to LMC service inclusion in the areas it serves with awareness, engagement, expansion, and progression.

**Question Guiding Inquiry (PICO)**

**Population.** The healthcare organization had implemented a new wellness portal, My Pathway to Health™ (MPTH) for employees to complete a Know Your Number® (KYN) questionnaire, and their annual WellScreen (WS) to receive wellness premium incentives. The KYN® questionnaire and WS calculated a personalized health risk assessment (HRA) that showed areas that needed improvement for the best health outcomes. The MPTH™ portal was secure and confidential, showed biometric screening results combined with the KYN® questionnaire information. It gave a predictive health risk score now and in five years. The wellness portal was an interactive platform that provided the initial health risk assessment, and the predicted five-year impact of taking no action. The project focused on the number of employees that completed their annual HRA for 2020. They could access their report and get involved with wellness benefits and services. Employees with prediabetes or T2D had the opportunity to engage in LMC services that could lead to improved outcomes with lowered A1C, glucose, and body mass index (BMI).

**Intervention.** Wellness navigators (WN) were activated to connect employees with the appropriate LMC services to meet their individualized wellness needs. Connecting with employees at their readiness for change stage optimized timing to address their current health concerns. LMC services included behavioral counselors, exercise, health coaches, lifestyle nurse specialists, nutrition, and providers, along with classes like the diabetes prevention program. The healthcare organization was aware that it needed to increase wellness opportunities for their employee population. Offering a platform with a connective service like a WN with a variety of wellness options could help meet the needs of a diverse workforce.



Timing, readiness for change, and accurate information were all vital elements in taking the next step for a person with a chronic condition to move into action regarding their healthcare management. Reviewing the activities of the WN when reaching out to employees for potential activation to the LMC services was assessed, evaluated, and modified based on findings.

Lifestyle medicine is an evidence-based practice with a clinical basis for providers counseling on making changes to behaviors and activities that promote good health (American College of Lifestyle Medicine [ACLM], 2019). Wellness changes that support lifestyle medicine include mind, body, and spirit with topics like plant-based nutrition, exercise, behavior changes, sleep health, tobacco cessation, responsible alcohol use, emotional wellness, and stress reduction (ACLM, 2019). Lifestyle medicine encompasses an understanding and appreciation of putting wellness changes in one's life into practice to prevent, reduce, or reverse non-communicable conditions like T2D (ACLM, 2019). The intervention was a process that reviewed steps involved to increase awareness of services and employee engagement to the LMC services offered by the employer.

**Comparison.** The assessed engagement of employees to the LMC's services and programs over three months was the start of a new model for enhancing employee benefits. Data collected on the employees that made and kept the appointments with the WN. Those employees that kept the meeting had a KYN® review, assessed for prediabetes, and given information about LMC services. The data collection was the starting point for future investigative work for strategies for LMC engagement. Paying attention to the number of employee connections, level of risk scores, number with prediabetes, what aspect of LMC they enrolled in, and trackable outcomes like A1C, glucose, and BMI could benefit the structure of outreach and staffing.

The WN logs were reviewed weekly. Appointments made and kept were evaluated for efficiency. Chart reviews could help assess the process and the engagement/activation with WN to respective LMC services. The decreased burden on employees with prediabetes or T2D could represent cost savings for the employer with reduced complications with T2D, ER visits, hospital stays, and medications.

**Outcome(s).** The intended outcome for the project was to assess the number of employees with prediabetes and T2D that received a targeted electronic mail and made an appointment with the WN. Of those that kept an appointment, how many had a high KYN® risk score and positive prediabetes score. The population that had elevated scores was at risk of developing T2D. Early recognition, awareness of LMC services, and taking preventative measures could lead to decreased health care costs to the organization and the individual. A comparison of the number of employees that needed the service versus those that were engaged in the service. Understanding the reasons for engagement and nonengagement in lifestyle medicine intervention services may play a part in modifying marketing, service delivery, or introduction to the LMC services. Evidence showed that lifestyle medicine interventions are beneficial to diabetes prevention, treatment, and management (CDC, 2019). Lifestyle changes are known to benefit people with prediabetes and T2D. If weight was decreased, exercise increased, food and drinks were modified, then there was the potential for improved biometrics and a revised treatment plan. The improvement of glycemic management and reduction in dosing or number of diabetes medications may lead to improved quality of life and reductions in overall health care costs for employees participating in lifestyle medicine interventions. The health care organization could increase awareness, receptiveness, improve benefits to meet the needs and perceptions of employees regarding LMC services.

## Summary

The implementation of increased information dissemination and marketing strategies for awareness and access to the LMC services employees could provide an optimistic view of the prevention and management of prediabetes or T2D. The new resources, support, and guidance from the health care organization could instill WN to determine the employee's best direction for optimal health and wellness. A more substantial LMC presence backed by evidence-based practices and support from the organization and leadership has the potential to improve biometric values, prevent diabetes, and decrease T2D complications with successful employee engagement in the services.

Offering employees LMC service within a healthcare organization's community as an adjunct to primary care could assist in areas of the overarching goals and topics that fit with Healthy People 2020. These same strategies could meet critical indicators that play a role in the Quadruple Aim for the health care organization's approaches. Lifestyle medicine guidance and interventions could potentially improve the population health, reduce per capita cost of employee care, and indirectly impact patient experience with healthier employees. Improved access to LMC services with self-care management for chronic conditions like prediabetes or T2D could lead to outcomes with fewer complications, ER visits, hospitalizations, less time away from work, leading to lower health care spending dollars for the health care organization. An approach that puts a value on lifestyle choices and changes in a health care system's employee population brings added benefit to the employee, the employer, and the community they serve.

## Chapter Two: Review of the Literature

The literature review was performed to examine the efficacy of engagement in lifestyle medicine approaches for employees with prediabetes and T2D within a large health care organization. A detailed literature review helped the DNP project with evidence-based practice initiatives to support ideas and plans to address the topic in this paper (Appendix A). Assistance from the Laupus Health Science Library librarian at East Carolina University was instrumental in developing literature search skills through the various available databases.

Keywords were established based on the clinical question: “How can a large health care system engage employees with prediabetes or T2D to the LMC services?” From the clinical problem, keywords were formulated to include “diabetes”, “prediabetes”, “lifestyle medicine interventions”, “wellness navigators”, and “engagement”. To obtain any documents from the search, words needed to be re-phrased or structured for each database. The search included such databases as the Cumulative Index to Nursing and Allied Health Literature (CINAHL), Google Scholar, and Public Medline (PubMed).

### Literature Appraisal Methodology

**Sampling strategies.** The most challenging literature search was with CINAHL. The multiple search terms used included “Wellness Navigators” “Behavioral Changes” “Lifestyle Intervention” “Lifestyle Medicine” “Diabetes” “Diabetes Mellitus, Type 2” “Engagement” when searched with AND produced one result that was not on the subject matter and worked with a developing country. The next search with limited terms of “Nutrition” “Exercise” “Behavioral Changes” “Lifestyle Medicine” “Type 2 Diabetes” “Medications” resulted in 23 articles, two were of interest; however, they were outside the five-year window. The third search with

"Lifestyle Medicine" and "Type 2 Diabetes" gave 223 results, with the filters: English, peer-reviewed, and within five years, 108 results were viewable with three articles picked.

PubMed utilized the medical subject heading (MeSH) terms to include: ("Diabetes Mellitus, Type 2"[MeSH] OR "Type 2 Diabetes" OR "Type II Diabetes") AND ("Therapy"[MeSH] OR "Diet Therapy"[MeSH] OR "Exercise"[MeSH] OR "Behavior Therapy"[MeSH] OR "Lifestyle medicine" OR "Nutrition therapy" OR "Food as medicine" OR "Exercise" OR "Physical Activity" OR "Exercise as medicine" OR "Behavior therapy" OR "Behavior modification" OR "Mindfulness" OR "Cognitive behavior therapy") AND ("Integrative Medicine"[MeSH] OR "Complementary Therapies"[MeSH]) to produce 104 results before filters. The filter of articles within five years was applied; the database yielded 34 results. After a review of these results, six articles were included for the DNP project.

The following terms: "Lifestyle Medicine" "Wellness Navigator" "Patient Navigator" "Type 2 Diabetes" were used for Google Scholar, PsycINFO, and SCOPUS with 2,220 results. A filter of within five years, 676 were assessed, and 17 articles chosen. Ongoing search strategies are in place with PubMed's National Center for Biotechnology Information (NCBI), and Google Scholar accounts with alerts that will send new articles based on search terminology to the designated electronic mail.

**Evaluation criteria.** Literature review inclusion criteria included publication year between 2014-2019, adult population, diabetes, prediabetes, lifestyle medicine, and interventions. Exclusion criteria for review included infants, children or adolescence, and dates before 2014 unless they were landmark studies.

During the literature review, an assessment of all included documents covered the level of evidence. According to Melnyk and Fineout-Overholt (2011), Level I through VII were

reached with the recent literature review search. Level II evidence had the most articles included in the search, which helped to support the true spirit of experiments allowing for relationships that present with a cause and effect impact. The second highest group included Level III evidence involving controlled trial design evaluating an intervention in one group and control in the other group. Level I evidence had the least amount of coverage from the search, possibly weakening the rigorous, detailed support for the DNP project.

All levels of evidence in the pyramid played a vital role in the DNP project. Project support came from systematic reviews, a meta-analysis of randomized controlled trials, and evidence-based clinical practice guidelines to expert opinions from clinical experience. The writer needed to be able to distinguish between articles and discover the higher-level evidence for project development. The search through a variety of databases revealed multiple levels of evidence found in the literature review (see Appendix A).

The Preferred Reporting Items for Systemic Reviews and Meta-Analyses (PRISMA) diagram detailed selected articles from sampling strategies and evaluation criteria (Moher, Liberati, Tetzlaff, Altman, & Group, 2009). For the PRISMA diagram for the DNP project, see Appendix B.

### **Literature Review Findings**

The literature review noted Level I, II, III, IV, VI, and VII were captured and shown in the PRISMA diagram. There were no articles that met the Level V criteria. The top three levels of evidence had the bulk of the retrieved materials strengthening evidence to give substance to the project. There were a few articles retrieved that covered meta-analyses, clinical trials, and evidence-based clinical practice guidelines.

Davies et al. (2018) noted the position statement update from the American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD) recommended an added focus on lifestyle management and diabetes self-management education and support. The recommendations included targeting efforts for obese people with diabetes to lose weight, initiate lifestyle changes, medication, or surgical interventions as needed (Davies et al., 2018). It was interesting to note that the first line of care for newly diagnosed type 2 diabetes had been lifestyle changes to diet and exercise as part of the initial steps to the algorithm of care. A comprehensive lifestyle plan was a new term adopted for diet and exercise (Davies et al., 2018).

People with prediabetes and T2D have several modifiable risk factors that, if addressed, could change the disease process. Modifiable risk factors for prediabetes and T2D include obesity, physical inactivity, hypertension, hyperlipidemia, and current smoking habits (CDC, 2020). Individuals that were considered overweight or obese were either at risk for T2D or had T2D (ADA, 2018). Encouraging weight loss with increased physical activity and decreased caloric intake could have a phenomenal impact on the trajectory of T2D. Weight loss for individuals with T2D had been noted to decrease diabetes medication in doses and quantity, and even propel T2D into remission (Dave, Davis, & Davies, 2019; Ades, Savage, Marney, Harvey, & Evans, 2015).

Group lifestyle intervention classes that focused on increased exercise and diet improvements have been implemented to improve glycemic control and management while decreasing biometrics and comorbidities while enhancing the quality of life and economic burden of diabetes to the health care system (Asaad, Soria-Contreras, Bell, & Chan, 2016; Botha

et al., 2017; Lanhers et al., 2017). The cost of lifestyle intervention programs must be calculated into sustainability.

Poorly managed or controlled T2D needs special consideration and care with added support with extra office visits to ensure changes to care are monitored and managed. Sbroma et al. (2017) utilized intensive lifestyle interventions for people with T2D that had elevated hemoglobin A1C (HbA1C) levels and were at risk for increased complications related to diabetes. Per Sbroma et al. (2017), the impact of lifestyle interventions showed glycemic improvements without additional pharmacological treatment.

There is a multitude of treatments that could help manage elevated blood glucose for people with T2D once the initial recommendations of exercise and diet are established or prescribed. Most people with T2D do not understand why they would need medication as they do not feel terrible like something is wrong. Therefore, they are resistant to starting an exercise program or limiting food and beverage intake that has an impact on rising blood glucose and weight. Medications are the next step for T2D treatment if the initial recommendations of exercise and diet changes are ineffective. If given options and alternative treatment plans that included being more active and eating healthier, they might be able to decrease the medications they did not want to take in the first place (Delahanty et al., 2015; Gamiochipi, Cruz, Kumate, & Wachter, 2016; Johansen et al., 2017; Katula et al., 2017; Lean et al., 2019).

Diabetes is a complicated condition that can affect multiple organs and systems throughout the body. Diabetes is not just about managing blood glucose. Living with diabetes can cause both fluctuations in blood glucose levels and emotional health. Lifestyle interventions need to target emotional well-being as an adjunct to care and a successful diabetes management plan (Bodai et al., 2018). Promoting emotional resilience along with healthy eating and



increased mobility need to be part of our health care system, with providers taking the lead in helping to guide patients with chronic illnesses into a more positive approach (Bodai et al., 2018).

The health belief model (HBM) was used to assist with changes to health-related behaviors and as a plan of action for interventions. The HBM helped with health education and promotion from the early 1950s when social psychologists at the US Public Health Service had concerns about low participation rates in free disease prevention and diagnosis screenings (Butts & Rich, 2018). Upon further investigation, the social psychologists found that the person's belief system regarding their health had a lot to do with whether they thought something was harmful or beneficial to them (Butts & Rich, 2018).

The economic burden of diabetes to our health care system is growing exponentially. The increased cost will worsen as people with diabetes age and people with prediabetes move into a T2D diagnosis (ADA, 2018). Implementing lifestyle interventions to assist people in making choices and changes independently without the need for a costly prescription could be part of the economical solution to decrease health care costs associated with prediabetes and T2D. Over time the number of people with prediabetes and T2D will increase. The health care systems and health care providers need to start making changes to treatments and care plans. Perhaps they should incorporate lifestyle medicine interventions in patient care and utilize known resources. Or as health care organizations, we will be part of the growing health care problem, and health care dollars will be lost.

There is a gap in care for people with T2D. There are diabetes prevention and self-management education classes for people with prediabetes and diabetes in the health care organization and the community. These classes are underutilized as providers are not aware that

they exist, or they do not refer their patients to the service. The courses are designed to empower people with prediabetes and diabetes with the information they can put to use in their world. The position statements recommend implementing diet and exercise changes (ADA, 2018).

Appropriate treatment plans of care are lacking, creating poor costly outcomes with increased insulin resistance, and increased resistance to modifiable care. Lifestyle Medicine is an adjunct to traditional care and focuses on modifiable risk factors while paying attention to the root causes of chronic conditions like prediabetes and T2D (ACLM, 2019). Intensive lifestyle interventions are associated with a healthy return on investment (ACLM, 2019).

### **Limitations of the Literature Review Process**

There were challenges in finding meaningful articles related to the DNP topic when searching for "lifestyle medicine", "interventions", "employee engagement", "prediabetes", "diabetes" and "wellness navigators" combination. Many articles on lifestyle interventions were within the realm of lifestyle medicine; however, they did not provide detailed information on the intended topic. The term prediabetes was associated with T2D, offering a plethora of articles that were relevant to the DNP topic.

As lifestyle medicine is becoming a more practiced adjunct to care, articles may be limited due to their historical existence or not easily accessible. Even materials found on lifestyle medicine websites were dated and did not necessarily fit into the five-year criteria for appropriate research literature.

### **Discussion**

**Conclusion of findings.** The literature review showed that there was well-documented information, research, and studies on lifestyle interventions with prediabetes and T2D. Though lifestyle medicine encompasses lifestyle interventions and has been around for years, there is

limited current literature tied explicitly to the topic of the paper. The literature review combined the use of lifestyle changes and interventions as an adjunct to traditional primary care for chronic conditions yet did not necessarily target lifestyle medicine.

The limited amount of current information for Lifestyle Medicine does not mean that it was not available. There may be other avenues of research to find up to date resources. One resource was found online as an advertisement for the upcoming American College of Lifestyle Medicine annual conference. One of the general sessions was titled "Reversing T2D and Insulin Resistance with Lifestyle Medicine," and another one that related to the DNP project titled "Practical Approach to Dr-Prescribing: A Pharmacist's Perspective". The ACLM organization could lead to further areas of scientific information related topic of the paper. Further discussions with providers at already established Lifestyle Medicine clinics would be beneficial in alternative research angles.

The literature promoted and encouraged lifestyle interventions for people with prediabetes and T2D, either individual counseling or group classes. The person with prediabetes and T2D had to be interested in making lifestyle changes, understand why they may be necessary, how they could benefit from them, with the appreciation that it would take time, commitment, and engagement from within themselves. By providing employees ongoing guidance, support, and encouragement with frequent regularly scheduled appointments as needed, employees could develop healthier habits that could continue over a lifespan.

Practices across America have opened their doors and minds to committed change to their health care delivery systems. Clinicians providing Lifestyle Medicine believe in the power of healthier living with plant-based food options, increased active living, mindfulness, and stress reduction (ACLM, 2019). The conversations continue how to build practices, improve

reimbursement for services, and show a return on investment for sustainability with Lifestyle Medicine as an adjunct to primary care (ACLM, 2019). The DNP project assessed the implementation of the Lifestyle Medicine Center and strategies for engaged employees living with prediabetes or T2D. The application of lifestyle medicine and interventions included working with a Lifestyle Medicine provider, a lifestyle nurse specialist, a health coach, a dietitian, a counselor, an exercise specialist, and WN. Lifestyle Medicine had a patient-centered approach, and referrals were dependent on goals and self-driven care plans according to each patient (ACLM, 2019). Would a Wellness Navigator be the answer to coordinate employees with prediabetes or T2D to connect with the healthcare organization's Lifestyle Medicine Center services?

**Advantages and disadvantages of findings.** Lifestyle Medicine could decrease the financial burden of care for chronic conditions, reduce complications related to chronic diseases, morbidity, and mortality, along with cost savings with the potential for less pharmaceutical use. Literature supported results that showed a decrease in the diabetes medication dose, a reduction of the number of diabetes medications, and even discontinuation of certain diabetes medications and insulin with the implementation of lifestyle interventions. Improving the health and treatment plan for people with prediabetes and T2D could create cost savings for the person, their employers, and the overall health care system.

Disadvantages of lifestyle interventions showed that people with prediabetes or T2D need regular motivation and encouragement to maintain weight loss and healthier living habits. It could be challenging if the entire family is not on board, and the person may feel alone and even isolated with their plan of care. Lifestyle Medicine needs to be innovative, creative, and “tech-

savvy” to ensure appropriate billing, appointments, and classes are relevant to get the best return on investment.

**Utilization of findings in practice change.** The LMC service approach encompassed behavioral counseling, dietitians, exercise specialists, lifestyle coaches, medication incentives, sleep health, and smoking cessation components that make up healthy lifestyle habits. The employee – LMC connection was through contact with the WN. The focus was on patient-centered care that embodied the LMC services that incorporated lifestyle changes that were short and long term approaches for living well when employees were ready to take the next step. The American College of Lifestyle Medicine (2019) embraces a lifestyle with "eating a predominantly whole food, plant-based diet, getting regular physical activity, adequate sleep, managing stress, avoiding the use of risky substances and pursuing other non-drug modalities, to treat, reverse, and prevent chronic disease". The LMC will utilize existing portions of the employee wellness program. Referrals to dietitians, lifestyle coach-nurses, exercise physiologists, behavioral counseling, group classes, with regular follow-ups would complement working with LMC providers. As employees embark on their wellness journey, they could encounter several components of the LMC services.

The theoretical framework of the health belief model (HBM) had tools that developed approaches to building relationships for encounters that met the needs of the employee population with prediabetes or T2D. Karimy, Araban, Zareban, Taher, and Abedi, (2016) found that self-efficacy played a great part in developing self-care behaviors and that the HBM would be a positive framework for interventional programs for women and diabetes. The assessment would look at sick role behavior, clinic utilization, and preventive health behaviors that impact connections and engagement to LMC services. There could be a benefit to the employee,

provider satisfaction, and increased public awareness of additional resources for chronic care outcomes and management. Empowered employees with a voice to their individualized health care could aide in dismantling barriers to care within the HBM.

### **Summary**

Lifestyle interventions used daily have the potential to bring about meaningful incremental changes to one's overall health. The LMC incorporated services and programs that involved mind, body, and spirit with a focus on nutrition, physical activity, emotional wellbeing, limited alcohol, and sleep health. Prediabetes and T2D are chronic conditions that apply exercise and diet as the first line of treatment in their algorithm of standards of care. Appropriate connections to various resources and continued support from the LMC could set the groundwork for decreased weight. Lowering one's body weight by promoting healthier nutrition and physical activity habits could lead to improved clinical outcomes for people with prediabetes and T2D. Lifestyle Medicine works to facilitate and sustain healthier habits for people to help improve life with chronic conditions as an alternative to adding medications.

Healthy People 2020 (ODPHP, 2019) had leading health indicators that touched on elevated A1C > 9% for people with diabetes, nutrition, physical activity, and obesity. The last three topics impacted the first topic. Changes made to nutrition, physical activity, and obesity may be successful outcomes that lower the A1C of the person with diabetes.

The engagement with LMC services could target all four areas of the Quadruple Aim (IHI, 2019). The LMC was concerned about its employees and set aside extra time to ensure that they were at the center of the plan of care, and it was what they expect. The LMC had the potential to target many areas of population health from a variety of angles. Lifestyle Medicine recognized that one pill does not fit all, so why should one care plan fit everyone. This approach

to care could meet people at any level to help them make small incremental changes or big ones if they wish. The LMC visit offered employees more quality time for multiple concerns compared to the traditional primary care visit. Interventions to implement lifestyle changes without the use of medications showed cost savings to the person with the chronic condition, the health care system, and the economic burden of chronic condition management for diabetes.

### **Chapter Three: Theory and Concept Model for Evidence-based Practice**

Connecting employees with free LMC services could support the prevention or management of chronic conditions like prediabetes or type 2 diabetes (T2D). This health benefit and wellness approach from the employer, if utilized by employees, could lead to improved quality outcomes. Diabetes prevention and management strategies could decrease the number of employees with T2D, the amount of medication required to control T2D, prevent hospitalizations, and reduce comorbidities. Both employees and employers have the potential to improve their overall well-being and decrease spending. The number of employees that utilized wellness services within the past year appeared to be very low to the number of people that had prediabetes or T2D within the health care organization. The DNP project explored engagement strategies to connect employees to the LMC services. It utilized the health belief model (HBM) to play a role in the further development of employee engagement. Living with prediabetes and T2D involves many aspects of self-care management skills that are required daily for health maintenance and complication prevention.

People with T2D often have beliefs that if they get started on diabetes medications, they will remain on medication for the rest of their lives. People with prediabetes often do not understand the severity of what doing "nothing" can lead to and often opt to ignore health care advice for prevention measures. HBM is one of the fundamental theories that consider an individual's health behaviors as part of their participation or lack of involvement in health care (Butts & Rich, 2018).

The LMC services assist in creating small incremental changes in one's life. Changes could impact the progression of prediabetes becoming T2D or T2D, leading to further complications. As T2D worsens, there is a need to increase the number of medications, adjust



the dosages, or add additional anti-hyperglycemic agents to the treatment plan. The risk of further chronic complications with uncontrolled or poorly managed T2D include amputations, blindness, heart attacks, kidney disease, and stroke (ADA, 2019). People's belief systems and how they perceive health promotion and prevention play a significant role in personal health care, expectations, and decisions about engaging in wellness programs.

The LMC's integrated health care team includes behavioral counselors, dietitians, doctors, lifestyle coaches, nurses, exercise specialists, and family members. A person's team of health care providers plays an essential role in developing trusting relationships that help to build personal knowledge, skills, and motivation to self-manage chronic conditions. Understanding the value of the LMC and its services could help to monitor, manage, control, and possibly reverse chronic diseases like T2D without the need for adding more medications.

### **Concept Analysis**

**Health belief model.** The health belief model is a behavioral theory in use since the 1950s (Glanz, Burke, & Rimer, 2018). During that time, people were not using health care services that were free to low cost within their community to help prevent disease or promote health. The wondering why led social psychologists to the theory that has expanded over the years to include six main topics that make up the HBM: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cue to action, and self-efficacy (Butts & Rich, 2018).

**Lifestyle medicine.** Lifestyle medicine is an approach to managing chronic diseases caused by inactivity, food choices, smoking, obesity like prediabetes and T2D without implementing medication or the use of surgical intervention (Mechanick & Kushner, 2016). The American College of Lifestyle Medicine (2019) defines lifestyle medicine as an evidence-

based approach to providing people with life skill tools to develop behavioral changes. Positive lifestyle choices can prevent or manage chronic conditions that were created by negative lifestyle choices.

**Lifestyle medicine intervention.** Lifestyle medicine intervention involves behavioral changes in one's life that include approaches to eating, exercising, smoking, alcohol intake, stress, and sleep habits that contribute to the development of chronic conditions. A collaborative approach with a multidisciplinary team (providers, lifestyle coaches, nurses, behavioral counselors, dietitians, exercise physiologists) plays an integral role in lifestyle medicine intervention. According to Morton et al. (2017), lifestyle medicine interventions include a structural design with a series of sessions that work on developing self-efficacy and impetus for change. Lifestyle medicine interventions incorporate an evidence-based therapeutic lifestyle approach with a whole-food, plant-based diet, regular physical activity, adequate sleep, stress management, and avoidance of risky substance abuse, with a non-pharmacological approach for prevention and treatment of non-communicable chronic conditions (Morton et al., 2017). The healthcare system has elements in place that provide behavioral counseling, lifestyle coaches, nutrition, sleep studies, and smoking cessation as part of its employee benefits package. These services are free to employees and dependents on the healthcare system's insurance plan.

**Lifestyle medicine center.** The lifestyle medicine center (LMC) could be the hub of care for employees. It could incorporate programs like "Food as Medicine", "Exercise is Medicine", dietitians, lifestyle coaches, and LMC providers that have healthy lifestyle approach imbedded in their care and treatment of chronic conditions like prediabetes and T2D.

**Prediabetes.** Prediabetes is a growing condition in the US that impacts more than 84 million people, with approximately 90% unaware that they have it (CDC, 2019). Prediabetes is

known as impaired glucose tolerance and diagnosed when fasting glucose is between 100-125 mg/dL, the 2-hour after a glucose load is between 140-199 mg/dL, or HbA1C is between 5.7-6.4% (McPhee, Rabow, & Papadakis, 2018, p. 1226).

**Type 2 diabetes.** Type 2 diabetes (T2D) was previously known as type II diabetes mellitus or non-insulin-dependent diabetes. T2D is a non-communicable chronic condition that is characterized by insulin resistance, with most of the cases related to lifestyle choices (Davies et al., 2018). The criteria for T2D diagnosis are fasting glucose greater than or equal to 126 mg/dL, 2-hour after glucose load greater than or equal to 200 mg/dL, and HbA1C greater than or equal to 6.5% (McPhee, Rabow, & Papadakis, 2018, p. 1226).

**Wellness navigator.** The wellness navigator (WN) position was a new role in the health care organization. It originated from patient navigators working with cancer patients to improve the timing of cancer treatment and care in underserved populations according to original research documented by Freeman (2012). The WN's job entailed connecting employees to appropriate services based on their wellness interests and goals that engage them to work towards positive health behavior changes. Ideal candidates for the WN position would have a public health foundation, understanding of lifestyle medicine concepts, and demonstrate sound judgment and interpersonal skills that include motivational interviewing to determine.

### **Theoretical Framework**

**Health belief model.** The health belief model (HBM) was a behavior theory used in health promotion and prevention since the 1950s (Butts & Rich, 2018). For example, Hochbaum (1958) noted that the Public Health Service had free tuberculosis screenings with mobile units in various neighborhoods offering free chest X-rays with limited success. A group of social psychologists with the US Public Health Service questioned the decreased use of preventative

programs that helped disease identification or health promotion programs that managed condition (Glanz, Burke, & Rimer, 2018). The psychologists found that beliefs about the susceptibility of disease and perceptions regarding benefits played a role in whether the person would act to gain health improvement (Glanz, Burke, & Rimer, 2018). The HBM was from the investigative work of psychologists looking for answers to their questions of why people did not take advantage of free health care services (Butts & Rich, 2018).

The HBM expanded over time to include six constructs: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cue to action, and self-efficacy (Glanz, Burke, & Rimer, 2018). Readiness to work on detection, prevention, or management of a health condition or concern happened when a person could move through the constructs of the HBM (Glanz, Burke, & Rimer, 2018). People with prediabetes and T2D, in some cases, do not even know they have the condition or are in a stage of denial or unreadiness to take the next steps to self-manage the condition (CDC, 2019). Perceived susceptibility and severity are a part of family history and lived experience. In some cases, what is learned is not always factual, though it is what keeps thoughts, attitudes, and beliefs which prevent individuals from moving forward to changing approach to healthcare.

The HBM works well with the DNP project as it assessed reasons for engagement in the lifestyle medicine interventions or making the LMC part of their wellness plan. Participation within the healthcare organization's employee benefits could help prevent T2D or improve T2D care. Health beliefs, perceptions, and fears could be very influential in making decisions for personal wellness and health care. Understanding these components could help build connections between employees, the LMC services, and their primary care provider for active engagement in care.

Bishop, Baker, Boyle, & MacKinnon (2015) found the use of HBM regarding patient involvement with safety that patient's perceptions contributed to engagement and well-being promotion. Involving people with prediabetes and T2D in lifestyle skills and being involved with their personalized plan and management of care could change the way employees view the advantages of the LMC services offered by their employer.

Perceived control over a chronic condition and self-efficacy were found to be related to medication adherence and A1C values (Gonzales, Shreck, Psaros, & Safren, 2015). Emotional distress exposed a potential link to poor diabetes-treatment outcomes in a study involving adults with T2D (Gonzalez, Shreck, Psaros, & Safren, 2015). Emotional well-being was a crucial component in managing chronic conditions like prediabetes and T2D. Lifestyle medicine interventions encompass six topics directed towards healthier living practices (ACLM, 2019). The health areas of focus within lifestyle medicine interventions are healthier eating with whole, plant-based foods, exercise, stress management, relationships, sleep, and tobacco cessation (ACLM, 2019). The American Association of Diabetes Educators (AADE) recognized the importance of emotional health and managing diabetes by including healthy coping and problem-solving topics in their diabetes self-management education resources (Powers et al., 2017).

**Application to practice change.** The DNP project focused on the process assessment of employee engagement to lifestyle medicine interventions within the LMC approach to assist in the prevention or management of T2D as an adjunct to primary care practice. The utilization of the WN for employees of the health care organization gave an added touch with personalized wellness goal planning. The WN approach provided an opportunity to inform or remind employees of the invaluable LMC services that were available at no cost. Peart, Lewis, Brown, & Russell (2018) found that patient navigators could help connect patients to providers and

various patient-center concepts throughout healthcare avenues. Patient navigators assisted with informing, instructing, and involving the patient, which led to supportive approachable care (Peart, Lewis, Brown, & Russell, 2018). The LMC services provided an additional benefit to wellness that works with primary care by improving lifestyle changes that are low cost and have no side-effects. Lifestyle medicine practiced by certified providers had the potential to create noticeable changes to chronic conditions that help treat, manage, and possibly reverse chronic conditions like T2D without medications (ACLM, 2019). According to Glanz, Rimer, and Viswanth (2015), HBM's organizational flow included background, perceptions, threats, expectations, actions, and behaviors (see Appendix B).

### **Evidence-Based Practice Change Model**

The purpose of the DNP project was to assess the effectiveness of strategies to engage employees that were at high risk for prediabetes or T2D into LMC services at the healthcare organization. Understanding and utilizing the new additions to the employee annual benefit package was a crucial element in moving forward with strategies to reach employees. The completed annual health risk assessment (HRA) and WellScreen with biometrics secured premium savings for the employee's insurance plan. At the start of the new fiscal year, a new online wellness portal- My Pathway to Health™ (MPTH), Know Your Number® (KYN) Questionnaire, and a new employee health population platform-Orthus Health® were introduced for wellness premium savings. The HRA now consisted of both the WellScreen and the KYN® Questionnaire for completion and savings. Orthus Health® received the data from the health care organization and determined the current health of the employees and in a predicted model in five years. The employee health population platform enabled the stratification of high-risk employees that could benefit from a targeted outreach to introduce lifestyle medicine

interventions. The culture of wellness at the health care organization was considered with the initiation of targeted outreach. The WN guided employees to areas of wellness services that were underutilized in the past.

The Institute for Healthcare Improvement (IHI, 2019) has a multitude of evidence-based practice (EBP) resources for improvement planning in healthcare organizations. The model for improvement was considered an EBP tool that included Plan-Do-Study-Act (PDSA) cycling to test changes within healthcare organizations quickly (IHI, 2019). The PDSA cycling process could stem from three fundamental questions that included what was trying to be changed, was their evidence to support the change that improved, and what could be changed to show improvement. The PDSA model could have a speedy impact on the process that could create outcomes promptly. The PDSA flowed into the next cycle adjustments that were made to the plan, which had the potential to change the action, moving into the next PDSA cycle for quality improvement or change (IHI, 2019).

The healthcare organization had initiated an innovative plan for employee wellness strategies with a new wellness portal, MPTH™ combined with the HRA data (see Appendix C). The process undertaken by the wellness division through the healthcare organization's benefit plan included a health and wellness portal purchased in July 2019. The expectations were for all employees to register in the MPTH™ online wellness portal, complete the KYN® questionnaire, and achieve their annual WellScreen by September 30, 2019 (see Appendix D). The data showed that of the 12,822 employees that were eligible to participate in the MPTH™ portal, 10,805 completed the MPTH™ registration, the KYN® Questionnaire, and their annual WellScreen by the end of open enrollment for 2020.

The initial report from Orthus Health®, the owners of the MPTH™ portal platform, showed that of the four chronic conditions: diabetes, coronary heart disease, stroke, congestive heart failure, diabetes was the top modifiable condition. The report also showed that diabetes was the top avoidable condition in the employee population over the next five years. Diabetes was the most expensive condition of the four conditions, with the projected five-year cost of future chronic disease onset at \$17,113,286. Based on the data collected from the Orthus Health® report, the wellness division decided to reach out by electronic mail and letters to those with elevated glucose, A1C, prediabetes, or diabetes. The continued use of the PDSA cycling component of the model of improvement worked with the elements of assessment, and evaluation could provide information to make changes to the WN role and design of the employee outreach flow (see Appendix E).

The wellness management developed the WN role that utilized an open approach for interviewing employees that incorporated a structured plan that encouraged ideas related to the HBM. Delivered messages from the WN helped relay information about the LMC services to employees. These discussions were meant to increase readiness for change and improve potential enrollment and engagement to LMC services.

The WN was in a significant position to expand the HBM into a working wellness assignment for individuals they encountered. Individuals with prediabetes or T2D who had a perceived susceptibility to developing the condition either go with the flow because they were going to get diabetes eventually, or they were in denial about their risk. WN's had the opportunity to explain who was at risk, what they could do to prevent or manage the chronic condition, and what LMC services were available to them through their employer. The WN had



started conversations about the employee's health with information about the risk and benefit of LMC services on a serious condition that needed their attention for prevention or management.

Psychosocial elements played a role in the concepts of HBM (Becker & Janz, 1985). Showing understanding and empathy with employee's attitudes and beliefs could assist with the guidance of their perceived severity of chronic conditions like prediabetes or T2D. During conversations with employees via telephonic navigation, the WN could narrow down the concerns an individual had regarding prediabetes or T2D. The WN position allowed for an open discussion about chronic conditions and complications that could or could not evolve into something more severe or costly. Once conversations began and relationships developed between the WN and employees, it led to more meaningful discussions about concerns related to prediabetes and T2D. These conversations could help those employees that were thinking they needed to make a change, take the next step for their wellness and make an appointment for one of the LMC services.

The perceived benefits of LMC services grew with conversations that allowed the WN to build up the health benefits available to employees by their employer at zero cost. As the WN explained the LMC services and lists the programs, the employee would be able to decide for themselves if the LMC services would benefit them in healthier lifestyle choices. The WN would be able to connect individuals to LMC services like the Diabetes Prevention Program, one on one lifestyle coaching with nurses or dietitians, or an adjunct to care with the LMC provider.

The perceived barriers to wellness and lifestyle changes were from within the employee as they think about reasons why they cannot participate in LMC programs. Those that were thinking about perceived barriers would continue to have reasons why it would not benefit them. The WN's role was to guide individuals in the direction that best fits their needs by giving them

information about LMC services and programs. The guidance provided by the WN could help find the fit that meets each person's health concern, wellness goal, physical location, hours of employment, and home life commitments. Building conversations with employees that had perceived barriers to their health could provide reassurances and assistance in figuring out the right fit for them at the right time.

Cues to action were brought about by completing the HRA in 2019 for the next fiscal year. Employees answered a variety of questions that led to a determination of "readiness" for change. It was the first step of the new employee wellness initiative to engage employees in starting a positive change in their health. The wellness navigator was able to provide a variety of information on various ways to start an action plan for the health and wellness of the individual, through the MPTH™ portal, employees received information that related to their interests and readiness for health changes. The WN set reminders for employees to enroll in LMC services and followed up with the employee's plan.

Being able to link employees to services that they were interested in and ready to work on promotes self-efficacy. Learned skills and knowledge developed empowerment that could lead employees to healthier lifestyle choices that showed successful outcomes like eating three servings of vegetables or walking 30 minutes a day. The interaction between the employee and the WN would determine the path of the enrollment process. Interactions could make or break a situation, and these aspects of the WN role would either help engage employees in service or hinder them.

The use of a theoretical framework like the HBM would aide in evaluating patients. The LMC services approach determined the perception of prediabetes and T2D, attitudes towards lifestyle interventions, and approaches to behavioral changes to prevent or manage chronic

conditions. The implementation phase consisted of a survey that incorporated the constructs of HBM to employees that showed a high risk for prediabetes or T2D through the HRA data. Compiled data from the survey helped lead to adjustments or changes to the approach of the WN and the LMC services.

### **Summary**

The DNP project was a process assessment that reviewed strategies to engage employees with prediabetes or T2D towards LMC services to assist with improved care, prevention, and management of chronic conditions. The PDSA cycling model assisted in planning small incremental changes that helped the LMC service enrollment or engagement process. The process assessment helped to determine if there was a change in the number of employees enrolled in LMC services, potential reasons for the decline of services, adequate staffing to meet the needs of the engaged employees, barriers to LMC service initiation, and improvements to outreach.

The health belief model was a guiding force for WN and their discussions with employees when they made contact. Open conversations helped determine individual perceptions, modifying factors, and their likelihood to act and enroll in LMC service. The DNP process assessment evaluated the enrollment process for employees of the healthcare organization with prediabetes or T2D that had completed the HRA and were engaged in LMC services. Regularly scheduled reviews of the WNs workflow determined the number of employees reached, not reached, declined services, were at risk for prediabetes, and enrolled in LMC services. These numbers would help to determine appropriate staffing requirements to meet the needs of the employee population, understanding of adequate services to meet the needs of those declining, and an assessment of enrolled employees versus engaged employees.

## **Chapter Four: Pre-implementation Plan**

The Doctor of Nursing Practice (DNP) project proposal was to determine a process assessment that connected a high-risk employee population with prediabetes or T2D to the Lifestyle Medicine Center (LMC) services via the Wellness Navigator (WN) activation system. The healthcare organization enhanced its wellness strategies for employees by introducing the LMC services and a new online wellness portal. The LMC services encompassed supportive, healthy living initiatives and changes that could influence chronic conditions. The goal was to evaluate the new strategy and the impact on employees with prediabetes or T2D that utilized the LMC services.

### **Project Purpose**

The process assessment for this project determined the number of employees engaged in LMC services during the 12-week implementation phase. Employees that completed the health risk assessment (HRA) through the My Pathway to Health™ (MPH) portal may have responded they were aware of health concerns and were ready to make a change. The WN within the LMC was a new position created to assist employees prepared to make a change with connecting to them to appropriate LMC services that fit their needs and health care concerns. The WN role review included a promotion, education, and communication techniques to connect with employees that completed their HRA in 2019.

### **Project Management**

**Organizational readiness for change.** The healthcare organization recognized the need to improve the health and well-being of its employees. Enhanced employee wellness services with positive lifestyle behavioral changes had the potential to lead to healthier employees. The improved overall health of employees builds the potential cost savings for the employer by

decreasing total employee health care expenditures. Addressing the health care needs for all employees across the expansive healthcare organization was a multifaceted process that needed to incorporate a strategic plan that connected employees to the LMC services. The WN role and the LMC services were evolving processes that had partnerships within the LMC, the healthcare organization, and community health care partners.

The administrator of the wellness division was instrumental in strengthening the LMC team. The new LMC director was hired in October 2019. A primary care provider was accredited in Lifestyle Medicine and incorporated into the LMC workflow. The electronic health record (EHR) connected to LMC. The wellness division was in the process of finalizing the hiring of its first WN. The healthcare organization was moving forward with the transformation of the employee wellness design to broaden its reach and its approach to employee care. The extended scope of employee wellness services with the addition of the LMC service offered employees a multitude of options for their personalized wellness plan. At this point, the process was moving in the direction of launching the LMC director position into action within the clinic and healthcare organization and hiring the first WN within the next month. The administrator of the wellness division had several meetings with leadership over the last year to determine approaches to implement a new employee wellness portal and the opening of the LMC.

**Interprofessional collaboration.** Team members included in the DNP project were the administrator of the wellness division, the director of the LMC, the WN, lifestyle coaches, and the administrative assistant for the wellness division. The project site champion was the administrator of the wellness division and reported to the chief human resources officer. The DNP student was the project lead and reported to both the director of the LMC and the project site champion.

**Risk management assessment.** The use of strengths, weaknesses, opportunities, and threats (SWOT) analysis for the risk management assessment of the DNP project identified areas that could benefit or harm the DNP project. Conducting a SWOT analysis allowed for the DNP student to bring areas of interest that were discussed, reviewed, and changed within the project plan.

**Strengths.** The physicians with Lifestyle Medicine experience were credentialed and positioned in the EHR system with a scheduling template. Interviews for the WN started initiated in November 2019. Leaders within the healthcare organization were informed and updated in the changes to employee wellness strategies. The marketing department was involved to emphasize essential details of the timely enrollment for the new HRA completion that impacted the employee benefits for the next year. Information about the latest employee health portal called MPTH™ was introduced from August to September of 2019 via electronic mail, digital signage, messages from the chief executive officer, and chief human resources officer. Completion of the MPTH™ and HRA allowed employees to have monthly health benefit savings. The healthcare organization had a comprehensive look at the health of their employees. The LMC adopted ideas for initiatives based on the wellness portal aggregate data. There was zero added cost to the employees. The employer had a strong commitment to the health of its staff, and there was the potential to decrease health care dollars spent with the utilization of the LMC services.

**Weaknesses.** In a short time, the employee wellness approach changed, a new HRA started, and a new employee health portal came to be. These pieces tied into each employee's benefits package moving into the next fiscal year. The initiative of the LMC approach may not reach the masses of the employees or be understood by those that might need the services most.

Employees that were impacted by social determinants of health do not always have access to extra time to participate in wellness services; they could have more than one job, raising their grandchildren, or extended family. The unfamiliarity of LMC services could pose a barrier and not connect with employees that need the LMC services most.

The marketing approach may miss the intended audience through electronic mail and digital signage. Lack of LMC resources in the various geographical areas of the healthcare organization may pose a problem for those employees ready to engage in LMC services and not near a location. The health care organization serviced 29 counties in eastern North Carolina. The ratio of WNs to employees could be overwhelming, as only one was in the process of being hired.

***Opportunities.*** Marketing measures would be able to outreach through other avenues with personal stories, advertisements, and flyers that were in various locations in the health care organization. Once appropriate staffing was in place, a vast campaign with readability and attractive appeal of LMC services and programs could be disseminated through all venues of the health care organization and the connected communities.

***Threats.*** There was the possibility of the intended audience; the employees not interested in the service or decreased comprehension of LMC services and how they could help them. The healthcare organization was expanding, and the LMC services and resources may not grow fast enough to meet the employee needs. There may not be adequate or appropriate funds set aside or budgeted for future growth and development.

**Organizational approval process.** This project developed over a short period at the DNP student's place of employment. The reorganization led to changes in management and the introduction of the senior administrator for the wellness division. In finding out about the DNP project, the senior administrator of the wellness division felt confident there was an area that

needed attention within the division. The development of a new segment of the wellness division incorporating many of the lifestyle medicine interventions already available called the Lifestyle Medicine Center. Through conversations and meetings with the administrator, the DNP project began to take shape within the structure of the LMC initiatives.

The senior administrator of the wellness division became the DNP project organizational site champion. This administrator reported to key leaders within the organization who were in support of employee health and initiatives that promoted a culture of wellness for employees. The organizational site champion gave the final approval to conduct the project assessment at the health care organization.

**Information technology.** The implementation of the DNP project included information technology components: Microsoft® (MS) Word, Excel™PowerPoint™, and EPIC®™. Data collection components from a new resource included information from the MPTH™ wellness portal and Orthus Health®. It was a secure system that with front-end access for employee engagement with a username and secure password and back-end access for super users, administrators, and management.

The MS® Excel™ spreadsheet tracked collectible data for demographics, utilization, appointments made and kept, WN encounters and referrals, KYN® and prediabetes risk scores. The MS® PowerPoint™ pulled the DNP project details together to create a poster presentation that depicted the highlights of the project from process assessment to proposed changes. The EPIC®™ EHR was utilized by the WN to access data, make referrals to LMC services, track office visits, and biometrics. The MPTH™ wellness portal allowed for the employer a comprehensive view of the employee population. The detailed view stratified people within the



health care organization that was high-risk and at a stage-of-readiness to connect with the LMC services through the WN.

### **Cost Analysis of Materials Needed for Project**

There was a minimal cost to the DNP project process assessment. The expenses included paper for printing out daily tracking schedules, pens, clipboard, and legal pad. The office supplies amounted to approximately \$29 (see Appendix F). Four meetings were set up with the WN, the director of the LMC, and the DNP student to review the PDSA, challenges, successes, barriers, and next steps. There was no cost incurred for these meetings. The DNP student noted the project cost was insignificant, however, the savings to the health care organization could be substantial.

The WN salary was listed as \$40,591 based on the national average for a patient navigator (Glassdoor, 2019). The direct cost for a person living with T2D was roughly \$9,600 (ADA, 2018). The estimated average cost savings with diabetes prevention measures through engagement in the LMC services of five employees totaled \$48,000/ year. The cost of the WN salary and the implementation of the DNP project could potentially be covered if T2D was prevented in five employees. If 5% of the employee population with prediabetes ( $n = 1,379$ ) became diagnosed with T2D within the next year, the estimated cost of \$662,400 could be added to the health care organization's financial burden. Diabetes prevention has the potential to save annual health care costs for the employee and the employer. No changes to modifiable risk factors for those with prediabetes could increase costs to the employer at an alarming rate.

### **Plans for Institutional Review Board Approval**

The East Carolina University (ECU) institutional review board (IRB) process was reviewed with the DNP faculty advisor and classmates to help understand the language of the

form and interpretation. The DNP student completed an IRB quality improvement/program evaluation self-certification tool. This form encompassed a description of the quality improvement (QI) project and eight yes-or-no questions used to address the intent of the project. Responses were uploaded into the ECU Self-Certification Tool Qualtrics survey. The organizational approval letter per the ECU DNP program was completed and signed by the site champion and the chief human resources officer (see Appendix G).

The project site had a Center for Research and Grants (CRG). It was determined by the DNP project site champion to discuss the DNP project with the CRG department. The CRG department considered the process assessment DNP project as research. A "Research Speed Dating" meeting was conducted with the head of the CRG department. The "Research Speed Dating" meeting led to an assigned research specialist to help guide the DNP student through the appropriate steps for IRB approval or waiver at the health care organization. CRG staff changing led to delayed paperwork completion.

By the end of the 2019 fall semester, the completed documents for the CRG at the health care organization included the data use agreement, the principal investigator agreement, and the site use letter. The CRG process was finalized with the team that involved the CRG administrator, the legal specialist, and the data specialist. An organizational approval letter was completed per the health care organization's CRG department and signed by the site champion and the chief human resources officer (see Appendix H). Per the health care organization's CRG department, a human research determination worksheet was completed and signed by the site champion and UMCIRB office staff (see Appendix I). Per the health care organization's CRG department, a principal investigator agreement was completed and signed by the site champion, chief human resources officer, and senior administrator of CRG (see Appendix J).

## **Plan for Project Evaluation**

**Demographics.** Demographic details collected include age, ethnicity, gender, income, and readiness to change as collected in the MPTH™. Continuous variables like age were used with mean and standard deviation to describe central tendency and dispersion. Categorical variables were defined with frequency and percentage for ethnicity, gender, income, and prediabetes or diabetes condition (see Appendix K). Data regarding age, ethnicity, gender, income, and readiness to change was collected to determine what categories were impacted versus those that engaged in LMC services. The demographic information discovered specific populations that the WN reached. The demographic data identified the number of employees with prediabetes or T2D reached and potential LMC service resources. The demographics helped determine select areas that needed attention in program planning and design to increase contact with those employees. A table format represented the demographic data.

A process measure looked at the time between completing the HRA and connecting to the employee interested in making a lifestyle change. The process assessment reviewed and tracked data points within the MPTH™ portal. The data points included data from the MPTH™ and HRA completion, date of contact with the WN, time of connection to LMC services, and appointment date. The MPTH™ follow up helped determine the timeframe for employees to get connected to the LMC services while they were at their stage of readiness for change. A time lag could have caused employees to become disinterested in the LMC services and feel that the services were not relevant to their present needs. Delayed appointments could impact the employee and their potential health going forward if they were not reached promptly. The PDSA cycling tool was utilized for outcome measurement strategies.

**Outcome measurement.** Outcome measurements showed how the health care organization met the needs of its employees for improvement to their health and well-being. The outcome measure assessed employee numbers with prediabetes or T2D, annual HRA completion, WN contact, and LMC service connections. This outcome determined if people with prediabetes or T2D were self-reliant and knowledgeable to call in to find resources to assist in managing their health concerns.

As T2D is a growing health and financial concern for the health care organization, the inclusion of the prediabetes risk test could assist those employees at risk. Completing the prediabetes risk test with employees via telephone took a few minutes to determine their risk (CDC, 2019). The ADA (2020) and the CDC (2019) support the use of the Prediabetes Risk Test and encourage mass use to help disseminate information about prediabetes. The CDC (2019) notes that most of the information on its website is not copyrighted and may be used without copyright permission (see Appendix L).

A process measure evaluated time between completing the HRA and connecting to the employee interested and ready to make a lifestyle change. A significant time lag may cause employees to become disinterested in the LMC services and feel a lack of importance. The timing of HRA completion and appointment could impact employee engagement on services.

The outcome added value in determining if the wellness division was reaching the high-risk populations that would benefit from the LMC services promptly. Future planning for WN staffing could be determined based on the outcome measurements of the compiled data from the daily reports.

**Evaluation tool.** An MS® Excel™ spreadsheet titled daily tracking was created for the WN. The outcome measurement used an evaluation tool designed in MS® Excel™ by the DNP

student. The purpose of the WN daily report sheet was to keep track of several variables. The variables included contact history and employee specifics. The contact history included the number of contacts per day, the type and time spent for the connection, and the result of the communication. The employee specifics included having prediabetes or T2D, employee engagement, time from HRA completion to an appointment with a specific LMC service.

The content of the evaluation tool columns had drop-down access to capture the information quickly. A daily paper tracker was created for the WN to have easily accessible while talking with employees and reviewing their results from MPTH™. The printable version of the evaluation tool and the description of the columns assisted the WN in completing daily records (see Appendix M). The weekly tracker was to assist in compiling daily tracking sheets at the end of each week (see Appendix N).

**Data analysis.** The WN daily reports were performed each workday from Monday to Friday, depending on the WN's schedule. The WN daily reports were collected weekly by the DNP student. The data was transferred to an MS® Excel™ worksheet. The MS® Excel™ worksheet determined the number of employees reached, connections made, time taken, and results of the connections. These results determined the turnaround time for employee engagement with the type of LMC service. The organization recognized that T2D is a costly concern that will grow within five years if no changes were made to the wellness culture initiatives regarding prediabetes and T2D. Connecting employees to LMC services was a crucial element in decreasing the number of employees with T2D, chronic complications related to uncontrolled T2D, and improving the healthcare costs to the organization.

**Data management.** The storage methods of electronic data included a secure external hard drive for the DNP student and an internal L-drive system for the healthcare organization.

The primary purpose of data storage was managed on an external hard drive in the DNP student's possession and locked in an office desk. The secondary method of data storage was the internal drive of the healthcare organization that required a secure username and password. The data was expected to be stored for six years per the healthcare organization's policy. All hard copies would be destroyed through secure shred cabinets. The digital data would be destroyed with a secure delete that was embedded in a Macintosh®™ operating system. The data was confidential with no PHI data collected. The only person with access to the DNP project data was the DNP student.

### **Summary**

The pre-implementation plan structured all the elements for implementation readiness. The health care organization had its readiness for change in motion by establishing the new wellness portal and opening the LMC with services and programs. It was set to incorporate the DNP project and accommodate the student. The interprofessional collaboration was ongoing with the LMC team members and developed as the project continued through the implementation phase.

The SWOT analysis brought strengths, weaknesses, opportunities, and threats in the area of risk assessment for strategies to engage employees with prediabetes or T2D. The form for the organizational approval was completed, and the ECU IRB deemed the DNP project was a quality improvement (QI). The plans for the project evaluation included demographics, outcome measures from the WN workflow analysis, PDSA cycle implementation, review of data, and adjusted workflow for WN as needed.

The data captured by the daily tracker of employee encounters with engagement to LMC services helped the DNP student capture moments in the PDSA cycle that required a change in

direction to provide positive results. Positive results were summarized with the DNP data report every two to three weeks. Meetings with the WN, the director of the LMC, and the site champion determined the changes that led to positive results in engagement.

The health care organization was interested in continued improvements to the Quadruple Aim. The health and well-being of the workforce were included in the Quadruple Aim initiatives. The health of its employees could determine the strength of an organization. The system-wide structure encouraged a health and well-being focus to the entire employee population by initiating a new wellness portal embedded with biometric data for employees with a monthly financial benefit for completion. The elements of the wellness portal shared information with the employee and the employer. Leadership worked to share more details, and marketing enhanced the appeal to use the wellness portal to connect with LMC services. Employees became more knowledgeable about prediabetes and T2D. The new-found knowledge and basic lifestyle medicine concepts helped to break down barriers that may have stopped employees in the past from engaging in wellness services.

## **Chapter Five: Implementation Process**

The implementation phase assessed and evaluated the strategies for engaging employees in the Lifestyle Medicine Center (LMC) services who had prediabetes or type 2 diabetes (T2D). The implementation phase spanned one semester and included 12-weeks of data collection. The implementation phase had weekly contact with the wellness navigator (WN), five Plan-Do-Study-Act (PDSA) cycling processes, and biweekly meetings with the LMC director, the site champion.

### **Setting**

The location for the DNP project was a health care organization with more than 14,000 employees in eastern North Carolina. It was a non-profit public entity affiliated with the local university. The health care organization included nine hospitals, home health, hospice, wellness centers, and multi-specialty physician and provider groups with over 100 practice sites in a region that covers 29 counties in the eastern part of North Carolina.

The health care organization receives funding from patient care and reimbursement from a payment system based on hospital claims and the value of care. The funds were then re-invested into the health care organization to ensure the quality, experience, patient safety, and operational planning that related to the mission, vision, and values of the organization. The health care organization's efforts included the Quadruple Aim and paid attention to the well-being of its employees within the organization. They incorporated patient experience, population health improvement with low cost, high-value care to the residents of eastern North Carolina.

The health care organization has a self-pay insurance plan and was concerned with the health state of its employees and the increased cost of diabetes to the benefit plan. The organization had a vested interest in their employee's health as it had a direct impact on patient



care, absenteeism, presenteeism, and employee health care costs. It worked towards developing programs and resources that met the needs of their employee's health and well-being. The health care organization was concerned about their employee's well-being and the communities of eastern North Carolina, where they lived and worked. Healthier employees affected the overall well-being of the health care organization's financial foundation and its communities.

### **Participants**

Participants in the DNP project included the wellness division administrator, the LMC director, the LMC's providers, administrative staff, WN, and the DNP student. The LMC director took over as immediate contact for site champion upon hire, and the wellness division administrator continued as site champion on record. The WN was the initial contact for employees who were ready for a change in lifestyle behaviors. Employees that decided to take the next step in making changes to lifestyle habits to improve their health scores and decrease risky behaviors were encouraged to contact the WN via a scheduling software, Calendly™. The WN had the opportunity to find out further details related to the wellness goals employees had in mind. This information helped guide the employee to intended services or programs that would best meet their needs for the next steps toward health and wellness improvement. Connections to the WN transpired by telephone, electronic mail, or messaging through the wellness portal, MPTH™.

The LMC's administrative staff made appointments for the employees, based on their interest in the LMC services. There were administrative staff in areas of behavioral health, exercise specialists, lifestyle coaches, LMC providers, and nutrition. The hiring of a WN facilitated employee connections with the LMC services within the health care organization or other resources that may be in their local area. Others involved in helping connect employees to

services to manage their wellness goals included front desk staff at the wellness centers and the nutrition clinic. Community providers aware of the LMC services were able to refer patients that were employees of the health care organization to appropriate services.

The participants of the DNP project were employees with prediabetes or T2D that were on the health care organization's insurance plan. These individuals were identified by the WN or themselves after completing the annual KYN® questionnaire and HRA through the wellness portal MPTH™. Completion of the HRA led participants to view their results to determine their risk score and health status. The KYN® questionnaire identified those employees that were at the readiness for change stage and were interested in connecting with the LMC services. Employees had the option to contact the LMC independently.

### **Recruitment**

The HRA completion included registering for a MPTH™ account, completing the KYN® questionnaire, and the annual WellScreen. The completed HRA at the end of the fiscal year gave employees a wellness incentive savings of \$650 for the medical plan for the new fiscal year. Employees had \$25 deducted from their paycheck each pay period if the HRA was not completed. The employee wellness portal had the tools and resources that could be self-navigated. Employees could review their HRA information, view their biometric screening results, and risk score history. The wellness portal had access to a health library, health calculators, and trackers, with goal-setting tools for personalized wellness goals. The wellness portal allowed for self-direction in care if the person thought there was a need or value for themselves, or they could do nothing and wait for the following year to compare their results.

The KYN® questionnaire asked about lifestyle behaviors and questions that prompted a readiness-for-change indicator. Employees that indicated a readiness for change were identified

as potential participants to target for LMC service engagement. The wellness division included the LMC that was able to reach out to employees that were interested in making healthy changes. It was unknown what the best route of communication would be for reaching employees that were at the readiness for change stage. The potential options included electronic mail, wellness portal messaging, telephone, or mail. The WN handled telephone intake for a variety of concerns, portal messaging, and electronic mail inquiries about the LMC services. The wellness portal had a messaging system that allowed employees direct contact to the WN for questions regarding their health. Employees could log in to their MPTH™ account and send a message within the system to a WN. The newness of the system had not shown great use of portal messaging.

The DNP project assessed the WN role, their connection with high-risk employees, and the engagement with the LMC services. This innovative approach to employee wellness assisted with the determination of the best fit or method for reaching their personal wellness goals. The information that employees received after completing the HRA may have been the prompter to take-action for their health. The KYN® report gave employees specific information about their health that they could see, read, and visualize. The detailed report from KYN® powered by Orthus Health® (2019) prompted employees to view the perceived severity of their health in five years if they chose to make any lifestyle changes. The wellness portal reviewed a personalized score with a relationship to its modifiable and nonmodifiable risk factors. The wellness portal and interactive platform laid the foundation for several aspects of the health belief model. It allowed employees the opportunity to reflect on modifiable and nonmodifiable risk factors, options to make changes, alternative approaches to health care, and in the next year comparison

of their results. Perceptions of health and options for a change gave employees opportunities to make informed decisions regarding their future self and well-being.

The DNP project recruitment for employees enrolled and engaged in the LMC service was based on a connection with the WN. Participants determined their self-readiness to start a wellness program, service, or learn more about offerings that they thought would benefit their health. Employees needed to contact the WN service line to connect them with an appropriate program that fits their wellness needs. The LMC services, for the most part, were at low (\$5/visit) to no charge or at discounted rates. Many wellness services for employees are free, though specific services are from a third-party vendor, or billed to the insurance plan as a medical visit. Barriers that came up were the distance to services, lack of wellness resources in some of the 29 counties covered by the healthcare organization. Participants of the DNP project were all employees that completed the HRA and had a wellness portal account.

The initial outreach was towards a group of employees that had prediabetes or undiagnosed diabetes listed in their HRA. The focus was related to the anticipated cost of those employees that had prediabetes, did nothing to change modifiable risks, and developed type 2 diabetes. This targeted population was sent a direct email with a link for an appointment with the WN. The link connected employees to a self-scheduling service, Calendly™. Calendly™ was an online appointment scheduling software service that the LMC opted to use to maintain a streamlined approach to the WN. Employees chose the time and date that worked for their schedule. The WN then reached out to connect with the employee based on their schedule.

Initially, the WN tracked the number of scheduled appointments, the number of connections with employees, whether the employee had a diagnosis of diabetes, their prediabetes risk test score, and tracking referrals to LMC services. After a couple of weeks into the

implementation, the KYN risk score, the type of referral, and follow up appointments were added to the data collection points.

Reluctance to participate in LMC services could be related to a lack of understanding of the benefit or the awareness of the services. Decreased awareness or appreciation of the health risk report and the LMC center benefits could impact the level of employee participation and engagement. Health beliefs and traditional views on personal healthcare may leave employees thinking that their primary care provider takes care of all their healthcare needs.

### **Implementation Process**

The implementation phase for the DNP project took place between January 13 and April 29, 2020. The initial phase of the implementation process assessed raw data collected within the wellness portal by the DNP student, the WN, the wellness specialist, and the director of the LMC. The data points collected included the number of calls, electronic mails, or messages to the wellness department from employees during the time from the initiation of the wellness portal in September 2019 to the start of the DNP project the week of January 13, 2020.

There was an initial PDSA cycle for the onset of the new wellness portal and LMC services conducted by the LMC director, the administrator of the wellness division, and the wellness specialist. The plan portion of the PDSA was the establishment of the new online wellness portal. The do portion of the PDSA was employees registering with MPTH™ completing the KYN® questionnaire along with the annual WellScreen. The study portion of PDSA reviewed the data from the new online wellness portal. The act portion of the PDSA was that employees were encouraged to call the wellness number if they had any questions or were interested in services to help with lifestyle behavior changes. The aggregate report from KYN® powered by Orthus Health® showed a baseline analysis for the health care

organization to national averages (Orthus Health, 2019). The report revealed that the health care organization's total eligible population was ( $N = 12,822$ ). The employees that completed the HRA ( $n = 10,805$ ) showed that the employees population with prediabetes (glucose 100-125 mg/dL) was 10.2% ( $n = 1,104$ ) and those with undiagnosed diabetes ( $\geq 25$  mg/dL or HbA1C 5.7-6.4%) was (2.5%) ( $n = 275$ ). The report projected the number of avoidable cases compared to national averages within five years based on if all modifiable risk factors were managed with lifestyle changes to obtain normal range. From the Orthus Health (2019) predictive model, the study population showed that of the 522 employees that could become diagnosed with diabetes in the next five years, 465 employees could avoid the diabetes diagnosis by obtaining normal limits on their modifiable risk factors. The estimated annual indirect and direct cost for a person with diabetes is approximately \$9,600 (ADA, 2019). Improved engagement with lifestyle medicine services to support employees adjusting their modifiable risk factors has the potential to save the health care system \$5,131,740 (Orthus Health Report, 2019).

The initial data points determined how many employees utilized the service, the number of employees with prediabetes and T2D, LMC services they were interested in, and appointments made with the LMC service. The data from the beginning of the fiscal year was reviewed and considered retrospective data for the initial inquiry of strategies for engagement in the LMC services after completing the online wellness portal enrollment.

Data collection points were tabulated weekly throughout the implementation phase. The first week was historical data from Orthus Health® and conversations with the WN. The next 12 weeks were daily data collection points from the WN with a summarization of all data after the semester. The WN kept daily tracking sheets with non-identifiers for the DNP project. Daily

tracking sheets were collected at the end of the week by the DNP student and transposed to an Excel spreadsheet.

The DNP project utilized PDSA cycling for which was intended to be every third week with the extracted data for the previous three weeks by the DNP student. The five PDSA cycles during the implementation phase ranged from 2-4 weeks in length. The initiation of the PDSA cycles fell on January 20, February 17, March 16, March 30, and April 13. There was a sixth PDSA cycle initiated the week of April 27 to continue working on initiatives to listen, educate, inform, and guide employees that were at high risk.

**PDSA 1.** The first PDSA cycle identified employees with prediabetes or undiagnosed diabetes, based glucose or HbA1C values. The next step was to send a targeted electronic mail to employees identified with elevated values. Once the email was received, employees determined if scheduling an appointment was of interest to them. The initial discussion was to review the KYN® risk score and discuss LMC services that had benefits in managing or reducing risk for chronic conditions. During the next four weeks, the collected data showed the number that responded to the outreach. The data determined the number of employees with prediabetes or T2D engaged in a conversation with the WN. The figure reached determined if this was an effective strategy to help engage employees with prediabetes or T2D in the LMC services.

From January 20 to February 16, 2020, there were 105 Calendly™ appointments. Of the Calendly™ appointments, 86% of the employees connected, 10% had diabetes, 32% had prediabetes based on the prediabetes risk test (CDC, 2019), 16 % were interested in a referral, and 9% had a KYN® risk score >60. The results determined steps for the next PDSA cycle. There was no data comparison at the end of PDSA 1. There were thoughts to change the time of

day for outreach or the day of the week. It was decided to keep the original time and date that was set, as there was only one WN.

The second WN was hired and started orientation on January 27, 2020, to the department and the health care organization. WN2 began in the wellness department shadowing and orientating to the WN position with the help of WN1 the week of February 3, 2020. The LM director anticipated increased volume and need for further support and hired WN3 and WN4 on a casual/part-time basis. Both WN3 and WN4 were familiar with the healthcare system but not to the WN position. WN1, who managed the first month of WN calls, took appointments at 10-minute intervals and found this to be adequate time.

On review of the WN call notes and data collection, 10-minute interval appointments were not enough time to address the KYN risk score, LMC services, taking time to find out employee's level of readiness to assist with a referral, and a follow-up. It was noted that consistency was needed with documentation between WN calls in Orthus Health®, tracking which LMC services employees connected with, and WN follow-up appointments documented in Orthus Health® to determine if the employee engaged in the LMC service or had any issues.

The KYN® risk score had not been part of the initial data collection. Orthus Health® scores overall health risk for chronic disease in the following manner: optimal (0-20), normal (21-40), abnormal (41-60), borderline high (61-80), high (81-100), and extremely high (>101). Looking at the data, it was a point of interest in determining who was making Calendly™ appointments? Were the emails getting to those employees that were above borderline high risk? The higher the score, the more at risk those individuals were of developing chronic conditions or experiencing comorbidities that were no longer modifiable. Employees with a high to extremely high risk became more of a priority for the health care organization.



**PDSA 2.** The second PDSA cycle involved adding the specific referral type and planning for a follow-up appointment to ensure that the employee engaged in the scheduled LMC service or if there were any issues with scheduling or wait time. Through February 17 to March 15, 2020, there were 71 Calendly™ appointments. Of the Calendly™ appointments, 82% of the employees connected with the WN, 1% had diabetes, 31% had prediabetes based on the prediabetes risk test (CDC, 2019), 18% were interested in a referral, and 31% had a KYN risk score >60, and follow up appointments were not documented. KYN® risk scores ranged from 22-119. It was determined that not all employee's data was uploaded into Orthus Health® from the occupational health records. There was a delay with the upload that delayed conversation with employees. Referrals were made to the diabetes prevention program, lifestyle nurse specialist, nutrition, and Hinge Health (a digital joint preservation program) for employees experiencing back or knee pain. It was noted that the majority of Calendly™ appointments occurred within the first two weeks of targeted outreach to employee's work electronic mail. During this time frame, WN1 went out on maternity leave from February 28 – May 30, 2020.

**PDSA 3.** The third PDSA cycle from March 16 – March 29, 2020, found the healthcare system in tumultuous times as it worked through a workforce reduction, which removed the WN3 and WN4 from the supplemental pool for this role. Even more catastrophic was the looming COVID-19 pandemic that was impacting local and global restrictions throughout the healthcare system and communities at large. The original PDSA that involved marketing strategies was put on hold, along with many other elements of the DNP project. The site location for the DNP project closed to usual business on the same day of the start of the third PDSA cycle.

During this PDSA, there were five Calendly™ appointments. Of the Calendly™ appointments, 100% of the employees connected, 0% had diabetes, 40% had prediabetes based on the prediabetes risk test (CDC, 2019), 40% were interested in a referral, and 20% had a KYN® risk score >60. Referrals were made to the diabetes prevention program, and follow up appointments were documented.

The WN2 was removed from her regular duties and trained during the first week of the COVID-19 restrictions for work in various parts of the healthcare system. During this time, there were no Calendly™ appointments, no calls, the LMC director took on a portion of the WN role by responding to the electronic mails and telephone calls. Appointments came to a halt by March 18, 2020. The PDSA changed its focus to re-assign the WN role for Calendly™ appointments to the lifestyle nurse specialist. By the end of the PDSA cycle, the plan was to give the temporary WN5 access to Calendly™ and work on employee appointments, reviewing KYN® risk scores, reviewing LMC services, engaging employees with appropriate lifestyle medicine services, and scheduling follow-up appointments. There were delays in the Calendly™ setup and access for the WN5 that led to decreased time for appointments.

**PDSA 4.** The fourth PDSA cycle from March 30 -April 12, 2020, working with another targeted electronic mail to the employee population with prediabetes and undiagnosed diabetes ( $n = 1,379$ ) and utilizing the lifestyle nurse specialist as WN5. The targeted electronic mail to employees went out on March 27, 2020; however, the Calendly™ schedule did not coordinate with the WN5 work calendar. The uncoordinated calendars led to overbooking, missed appointments, and time spent cross-referencing to ensure all employees received their prearranged appointments.

During this PDSA, there were 21 Calendly™ appointments. Of the Calendly™ appointments, 62% of the employees connected, 5% had diabetes, 24% had prediabetes based on the prediabetes risk test (CDC, 2019), 33% were interested in a referral, 43% had a KYN® risk score >60, and 19% had a follow-up appointment with the WN5. KYN® risk scores ranged from 47-156, with the average meeting borderline high. The WN coordinated referrals to the DPP, nutrition, lifestyle nurse specialists, and the joint preservation program, with documentation in Orthus Health®.

Advantages of having the lifestyle nurse specialist act as the WN5 gave insight into the workflow, Calendly™ troubleshooting, appointment time frame, conversation highlights, documentation, and challenges with employee connections to LMC services. One issue that arose with this PDSA was consistent documentation for follow up appointments for those that did not respond to their Calendly™ appointment. Follow-up documentation would benefit the workflow and assist other WN's as needed. Several questions occurred as the WN5 maintained the Calendly™ schedule. What was the best way to reach the extremely high category? Was the targeted electronic mail working to recruit potential employees into LMC services to prevent type 2 diabetes or improve diabetes care? Where do the high to extreme high-risk employees work? Was there a pattern in the job, location, socioeconomic factors to those that did not respond to the electronic mail? What if those reached were the “worried well”? What if employees not connected fit into categories of social determinants of health? What if those with the most need for services have limited access to computers and their electronic mail? The fourth PDSA set the stage for the next cycle.

**PDSA 5.** The fifth PDSA cycle from April 13 - April 26, 2020, was to send out another targeted electronic mail to the prediabetes and undiagnosed diabetes employees as there seemed

to be an increased number of appointments during the first week of the electronic mail outreach. Subsequent weeks showed a decline in employee responses to targeted electronic mail outreach. Due to the decrease of Calendly™ appointments, the WN5 determined that utilizing the dashboard in Orthus Health® to target the extremely high-risk employee population with a personalized telephone call may be of increased benefit. Each telephone call took the place of a potential Calendly™ appointment with similar message delivery and data collection.

During PDSA 5, there were ten telephone calls made to the extreme high-risk employees in place of waiting for Calendly™ appointments. Of the calls made, 10% of the employees connected with the WN, 100% had diabetes, 0% had prediabetes based on the prediabetes risk test (CDC, 2019), 100% were interested in a referral, 100% had a KYN® risk score >60, and 100% had a follow-up appointment with the WN5. KYN® risk score for the one employee that connected was in the extremely high-risk category with a score of 132. The individual had type 2 diabetes and reported an HbA1C of 14%. A referral was made to the lifestyle nurse specialist to assist with lifestyle medicine changes for diabetes self-management documented in Orthus Health®.

The lack of response after the first week led the DNP student to think that each targeted population should get an “eye-catching” header electronic mail each week for a series of four weeks, followed by a telephone call to the extreme high-risk category. Due to the workforce and workload with a WN team of one, this posed many challenges. Another targeted electronic mail was to be sent out during the second week of this PDSA to the employee population with prediabetes and undiagnosed diabetes ( $n = 1379$ ) and utilizing the lifestyle nurse specialist.

**PDSA 6.** The sixth PDSA cycle from April 27 - May 25, 2020, extended beyond the DNP project deadline to continue with process assessment and program design for the employee

population at the health care organization. Plans were implemented to incorporate the WNs to guide and assist all employees during the COVID-19 crisis. The reassignment was not related to the DNP project.

### **Plan Variation**

The newness of the LMC services, the addition of a WN, and a new wellness portal gave many opportunities for the need to adjust the implementation phase. Adjustments to the implementation plan occurred throughout the process due to COVID-19 with changes to staffing.

During the DNP project implementation, the health care system experienced a workforce reduction. The workforce reduction led to changes in planning and approaches to employee conversations and ensuring sensitivity and mindfulness in the tone and the content during telephone appointments. The targeted outreach electronic mails went out before the workforce reduction, so people that may have lost their job were still on the electronic mail list.

At the start of week 10, the COVID-19 pandemic led to facility closures and restrictions that started within the health care organization. The restrictions led to evolving changes for employees, departments, job descriptions, and anything that was known as routine. COVID-19 changed the structure of how everyone did business, worked, and lived. The DNP student maintained the DNP project during changes within the department with job reassignments to accommodate restrictions. The WN duties were initially taken over by the LM director to cover the telephone line with a multitude of employee questions and concerns. The lifestyle nurse specialist assumed a portion of the WN role along with their current job duties. The position needed to obtain access to Calendly™ to allow employees to make appointments with the temporary WN during the current COVID pandemic.

## Summary

The implementation phase was for the discovery of the strategies that assisted in linking employees with prediabetes or T2D to the most appropriate LMC services after completing the annual MPTH™ and KYN® questionnaire. This process assessment project monitored the effectiveness and efficiency of and program connections for employees with LMC services. Evaluations were based on the number of employees that made Calendly™ appointments, were reached by the WN, determined if they had diabetes, interested in LMC referrals, and had a follow-up appointment after the calls. Components considered as challenges were reaching employees, low connectivity with Calendly™ appointments, and general interest in LMC services. These challenges opened areas of opportunity to connect with high-risk populations by alternative measures like targeted postcards, embedded messages in the wellness portal, and personalized telephone calls.

The PDSA cycles reviewed how the WN facilitated the employee connections, determined their level of diabetes, and their interest in the LMC services. There was a turn-around time that was long enough to collect data for review and short sufficient to impact the engagement strategies in a few weeks. The PDSA cycles and analysis of data led to addressing issues regarding approaches for engaging employees with prediabetes or T2D with LMC services. The length of time to connect with an employee was an element of concern. If the time was too lengthy, the person might have lost interest in the LMC services as the stage-of-readiness had passed. When this concern surfaced, it was added to the next PDSA cycle to determine a quick turn-around solution.

There were unknown challenges for people living with prediabetes and T2D. There were known challenges for the DNP student and WN with strategies to connect and engage

employees to LMC programs and services that supported healthier options for successful management of chronic conditions like diabetes. Alternative approaches that reached and connected with employees were discussed, removed, added, and changed as data revealed a need. The DNP project addressed these concerns so that new approaches or changes met the needs of the employees that were seeking LMC services for prediabetes or T2D.

## Chapter Six: Evaluation of the Practice Process Assessment

The process assessment evaluation at the project site occurred over twelve weeks. The data collected by the DNP student regarding strategies for engagement of an employee population with diabetes or prediabetes to lifestyle medicine services were reviewed, analyzed, and discussed.

### Participants

The team members involved in the DNP project included the project site champion-director of the Lifestyle Medicine Center, two wellness navigators (WN), and the DNP student. The WN1 position started maternity leave midway through the second PDSA cycle. WN2 was a new employee that started midway through the first PDSA cycle. A few weeks later, the reassignment of the WN2 to another area in the health care system, left the department short-staffed.

Information collected for the project came from employees who completed their annual health risk assessment (HRA) for the fiscal year 2019 at the health care organization and contacted the WN for an appointment. The total population of the health care organization's workforce was approximately 14,000. Of the entire employee population, 91.5% ( $N = 12,822$ ) were eligible to complete the annual HR based on the health care organization's insurance coverage. From the total eligible employee population, 84.3% ( $n = 10,805$ ) completed the yearly HRA for the fiscal year 2019. The targeted outreach was for employees with undiagnosed diabetes or prediabetes based on elevated glucose, or A1C levels totaled 12.8% ( $n = 1,379$ ).

Overall, the employee population majority were white, female, and between the ages of 31-50 years old. Demographic information was securely stored in the occupational health management system and entered at the time of hire (see Table 1).



Table 1

*Demographics of Employee Population with Completed Health Risk Assessment*

Baseline characteristics	<i>n</i>	%
<b>Gender</b>		
Female	7,890	78.9
Male	2,915	21.5
<b>Race</b>		
White	6,958	64.4
Black	2,971	27.5
Asian	259	2.4
Hispanic	248	2.5
Other	367	3.4
<b>Age</b>		
21-30	2,312	21.4
31-40	2,691	24.9
41-50	2,582	23.9
51-60	2,334	21.6
61-70	843	7.8
71-80	32	0.3

**Intended Outcomes**

The goal of the DNP project was to assess the number of appointments employees made to meet by phone with the WN based on their self-assessment and perceived benefit to their

wellness. The WN appointments reviewed the KYN risk score value and meaning, complete the prediabetes risk test with an explanation, discuss lifestyle medicine services, and encourage a follow-up appointment. This review could be the start of meaningful conversations regarding the employee's health and develop a relationship for further discussion of the lifestyle medicine clinic offerings from the health care organization. The premise was connecting employees with a WN to discuss lifestyle medicine programs that could meet the wellness needs of the employee with diabetes or prediabetes.

The short-term goals were assessing the appointments made by employees for the WN to review HRA scores and lifestyle medicine interventions that were available for employees to manage or prevent type 2 diabetes. Intermediate outcome evaluations determined the number of calls between employees and the WN. Those employees who made and kept their scheduled appointment with the WN were able to obtain added information, understanding, and appreciation of their current health and health benefits from the health care organization. The connection between the employee and the WN allowed for further assessment of those with diabetes, positive prediabetes risk tests, referrals to lifestyle medicine services, level of risk, and follow up appointments.

The predictive risk model from the health management system showed a significant increase for diabetes in five years if the employees and the employer did not address the modifiable risk factors for type 2 diabetes now. The long-term outcome could be assessed with quarterly reviews to determine if the potential risk of type 2 diabetes in the health care system is decreasing.

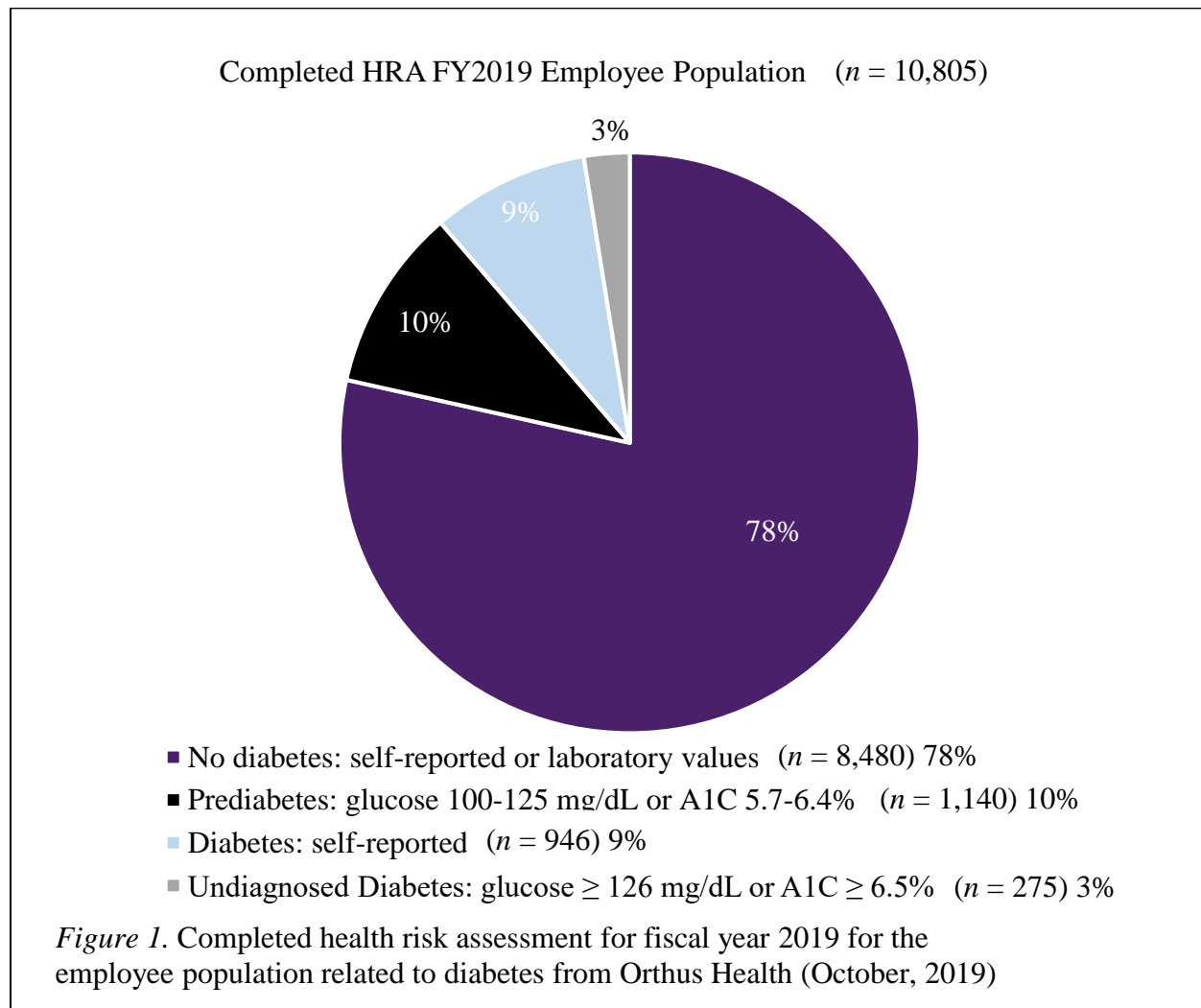
**Findings.** The project implementation led to discovering variations in the number of appointments made and those appointments that kept with the WN. The supplemental positions

for WN3 and WN4 were reassigned to other duties in the health care organization. The start of the COVID-19 pandemic and restrictions throughout the state led to multiple changes at the project site. The unexpected public health crisis led to the reassignment of duties within the project site. The responsibilities of the WN role were taken over partially by the LMC director, and one of the lifestyle nurse specialists.

The prediabetes risk test added increased awareness and education to the conversation during the appointment. The discussion of prediabetes risk led to increased focus and understanding about diabetes and diabetes prevention. Dialogue regarding the HRA led to further discussion of lifestyle medicine center services and programs available to employees. HRA discussions included the Know Your Number® (KYN) risk score, which in some cases was not available in the employee's chart. It was determined there was a delay in processing from the occupational health data to the upload of data to the wellness platform.

**Population.** The total employee population ( $n = 10,805$ ) that completed their annual HRA fell into one of four categories: no diabetes, prediabetes, diabetes, and undiagnosed diabetes (see Figure 1). No diabetes was self-reported or with a laboratory value (fasting glucose  $< 100\text{mg/dL}$  or hemoglobin A1C  $< 5.7\%$ , American Diabetes Association, 2020). Elevated glucose categorized prediabetes (glucose  $100\text{-}125\text{ mg/dL}$  or hemoglobin A1C  $5.7\text{-}6.4\%$ , ADA, 2020). Diabetes was self-reported in the health risk assessment questionnaire. Elevated glucose or hemoglobin A1C determined the undiagnosed diabetes category (glucose  $\geq 126$  or A1C  $\geq 6.5\%$ , ADA, 2020). Outreach to the employees identified as having undiagnosed diabetes ( $n = 275$ ) or prediabetes ( $n = 1,104$ ) was conducted by targeted electronic mail on four separate occasions during the PDSA cycles. The targeted electronic mail went out to  $8\%$  ( $n = 1,379$ ) of the total population that completed their annual HRA. The population that responded (made an

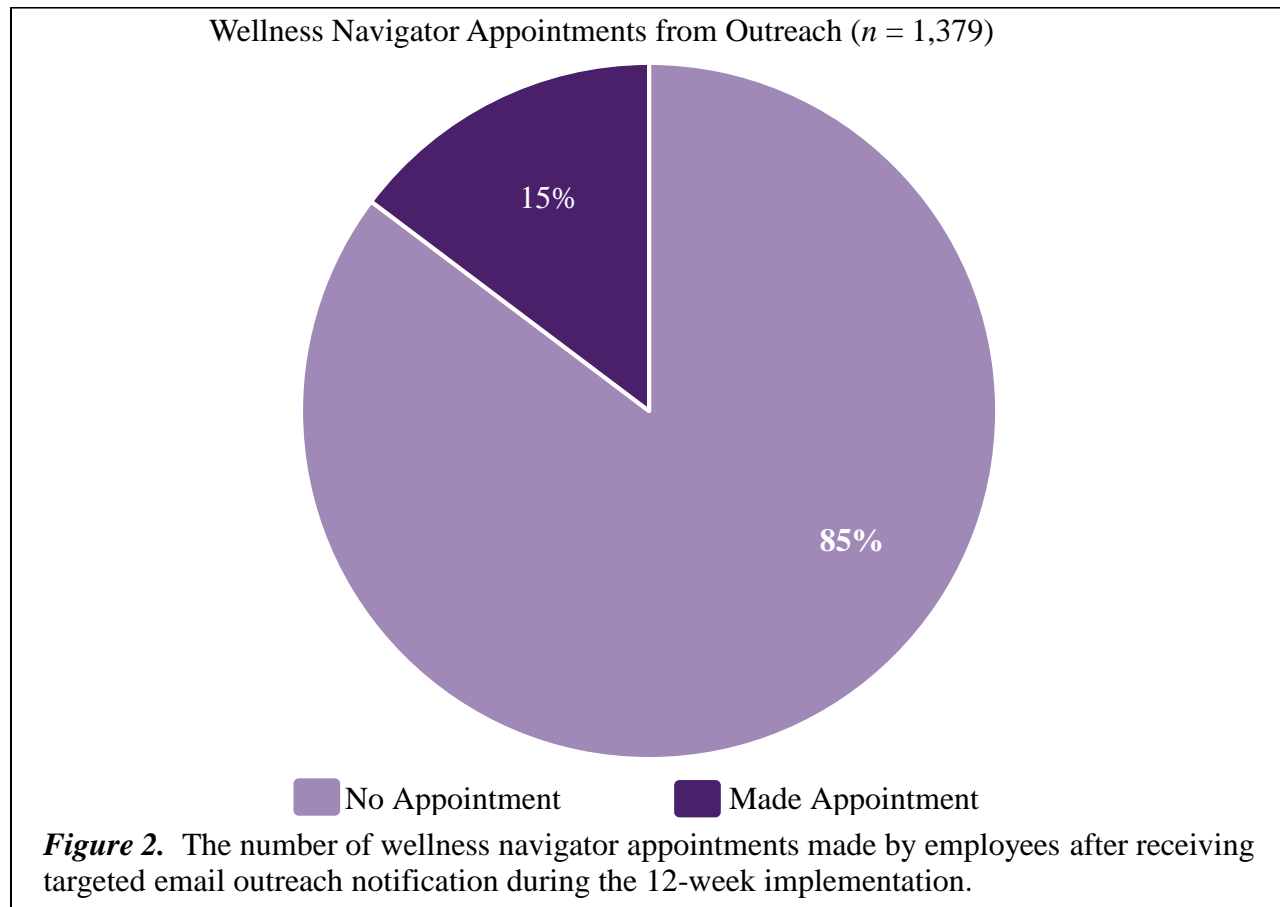
appointment) and connected (kept the appointment) with the WN could be considered one benchmark for outcomes. The appointments kept represented a starting point for outreach and evaluation. A quality improvement could review the data quarterly and look towards increasing the targeted outreach responses.



**Targeted outreach.** The completion of the implementation process found that the targeted electronic mailing ( $n = 1,379$ ) resulted in 15% ( $n = 203$ ) of the outreach population, making an appointment to speak to the WN (see Figure 2). Fifteen percent was the baseline for responses to the targeted electronic mail. The start of a new wellness initiative combined the annual HRA (WellScreen and KYN® questionnaire), wellness portal, and health management

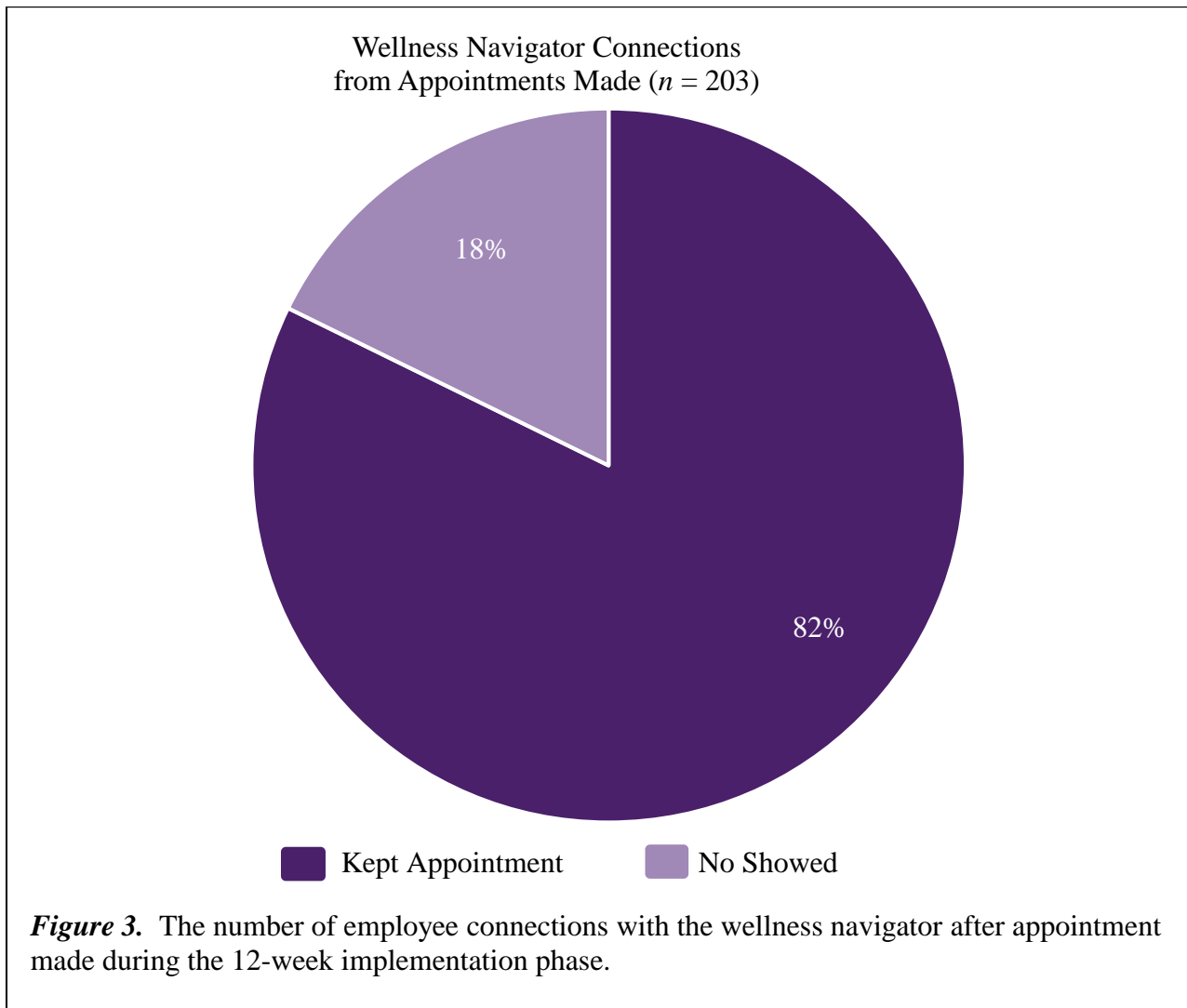
system. Most responses occurred within the first week of electronic mail notification during the evaluation of the targeted outreach.

The process assessment could look at changes in response to the WN outreach, determine if the electronic mail was the best way to reach high-risk employees, and assess the employee population awareness. Paying attention to the demographics of the health care system may help change the outreach process and potential.



**Wellness navigator connections.** There was 15% ( $n = 203$ ) of the targeted population that made an appointment with the WN. Of the group that made an appointment, 82% ( $n = 167$ ) kept the appointment and connected via telephone with the WN. Those that connected with the WN were able to discuss their HRA, prediabetes risk test score, and lifestyle medicine services and programs. There was a more significant response for connections once the appointments

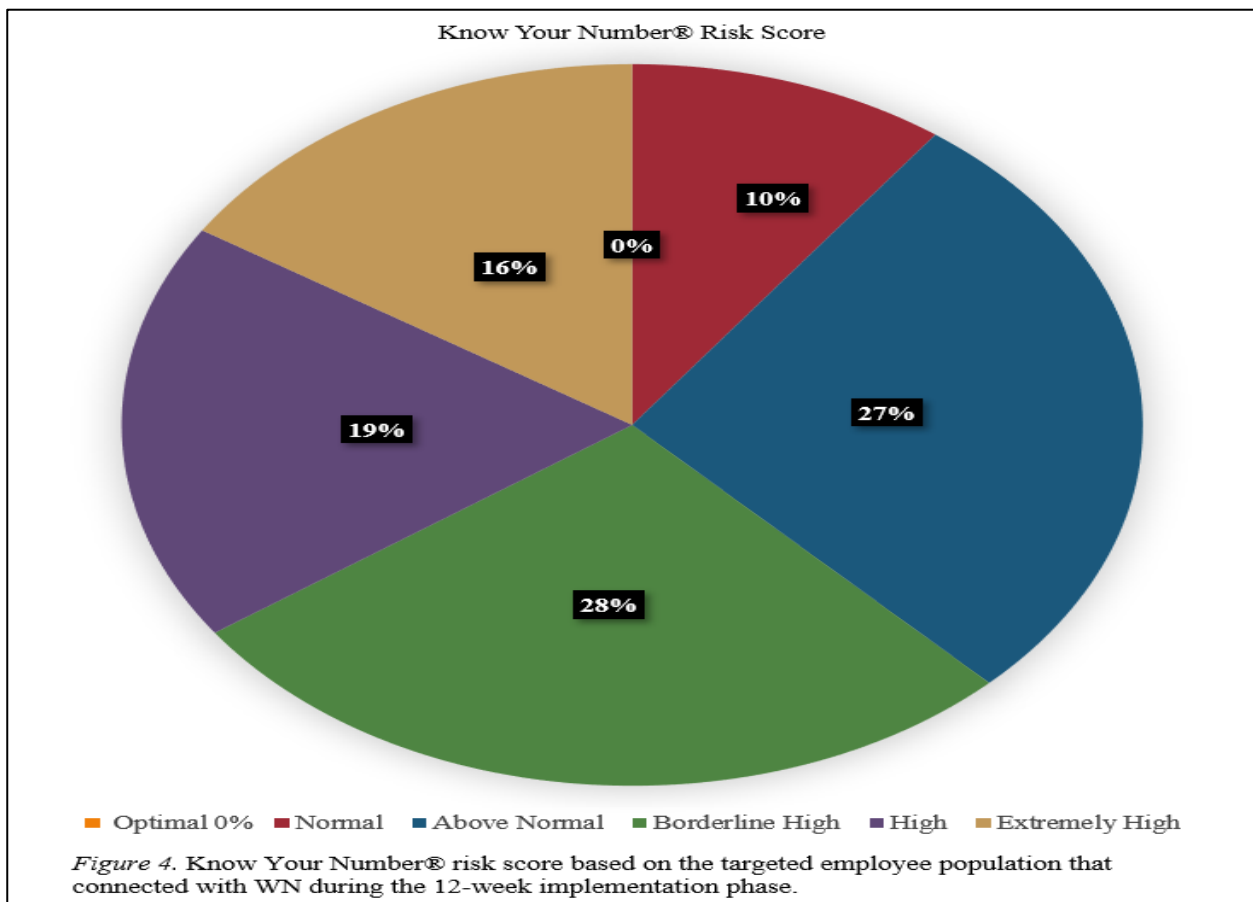
were scheduled with the WN (see Figure 3). The potential for WN connections could come from increased employee awareness regarding the service.



**Know your number risk score.** It was determined that 7% ( $n = 12$ ) of the population that connected with the WN had a diagnosis of diabetes, and 38% ( $n = 64$ ) had a positive prediabetes risk test score. Employees interested in lifestyle changes for specific wellness goals were referred to as one of the lifestyle medicine center services, totaling 24% ( $n = 40$ ). Employees were interested in lifestyle coaching, nutrition, behavioral counseling, and the

diabetes prevention program. There were limited tracking details for the referral types completed during the implementation phase of the project.

The KYN® risk score identified employees into six categories: optimal (0-20), normal (21-40), above normal (41-60), borderline (61-80), high (81-100), or extremely high (>101). The KYN® risk scores ranged from 22 (normal)-156 (extremely high), the  $M = 73.48$  and the  $SD = 29.13$ . The compiled data showed the level of health risk to the employee (see Figure 4).



**Summary**

The process assessment for strategies to engage the employee population with diabetes or prediabetes through a connection with the wellness navigator determined that having at least one designated staff member was necessary to maintain a workflow. The fulltime position of a WN allowed delving into the HRA data and the health management reports to build outreach plans

for meeting the needs of the highest of the high-risk population with diabetes and prediabetes. The gaps for appointment time lapses with targeted outreach, and routine follow-up impacted efficiency, productivity, and outcomes. The WN position has an opportunity to improve employee connections, conversations, and rapport building. Lifestyle medicine services are an excellent resource for diabetes prevention and management only if employees are aware and engaged. Lifestyle medicine intervention referrals have the potential to decrease the overall cost of diabetes to the system within five years of prediabetes identification.



## Chapter Seven: Implications for Nursing Practice

The Doctor of Nursing Practice (DNP) students were immersed in the *DNP Essentials* from the start of the program to the end of the project. The *DNP Essentials* are guides for continued success as future practitioners in their areas of practice. The *DNP Essentials* encompassed eight content areas that provide students and practitioners a guide that develops into a scholarly project that has the potential to change real-world sites and issues in health care (Moran, Burson, & Conrad, 2017). The following chapter expands on each of the *DNP Essentials*. This chapter detailed how the *DNP Essentials* pertain to the project's focus on assessing the process of connecting an employee population with prediabetes or diabetes to the Lifestyle Medicine Center resources.

### Practice Implications

In 2006, the American Association of Colleges of Nursing (AACN) published *The Essentials of Doctoral Education for Advanced Nursing Practice*. This publication sets specific elements of core competencies for DNP programs seeking accreditation. The *DNP Essentials* were vital components for project and program completion. Combining the DNP project with the *DNP Essentials* completed one portion of the competencies needed for all DNP graduates.

**Essential I: Scientific underpinnings for practice.** The new role of wellness navigator in the Lifestyle Medicine clinic (LMC) and the initiation of a new health risk assessment platform had the potential to connect and engage employees with prediabetes or diabetes to lifestyle medicine resources. This connection to lifestyle medicine services that may not have been previously used or underutilized could improve outcomes for employees with diabetes or prevent type 2 diabetes. Expanded knowledge and utilization of the complimentary lifestyle medicine services could enrich the lives of those living with diabetes or prediabetes. Improved

outcomes for diabetes or preventing type 2 diabetes in an employee population had the potential to save the employer money at many different levels.

The DNP project was in the infancy stages from many aspects of wellness, lifestyle medicine services, care, and delivery. Following the health belief model to incorporate increased outreach with electronic mail, mail, and telephone calls at staged segmented times to assist in building trusting relationships. Connecting people to evidence-based practices involving lifestyle medicine services and interventions were elements that supported prediabetes and diabetes self-care management for improved health outcomes.

**Essential II: Organization and systems leadership for quality improvement and systems thinking.** The improved well-being of the employees of the health care organization was an integral part of improved community health disparities. Healthier employees decreased employer costs for managed care of employees with diabetes. The targeted population could set the groundwork for reaching other targeted populations with hypertension, hyperlipidemia, obesity that could benefit from lifestyle medicine service interventions. Identified strengths and weaknesses of a new process in one population could determine areas for revision and expansion. The use of the Plan, Do Study, Act (PDSA) tool had established a quick change to processes in a matter of weeks that enabled data assessment with effective strategy revision (IHI, 2019).

Assessing the process of the wellness navigator role with connecting to employees was a crucial element in widening the number of employees that got connected with lifestyle medicine services. This started at the micro-level with the WN. Understanding the steps involved with implementing several new elements (wellness navigator positions, wellness platform- Orthus Health®, annual health risk assessment tool with a questionnaire) and marketing strategies to

connect employees to lifestyle medicine services in a revised approach. This works on multiple levels of the health care system. The services that were offered come from the health care organization's benefit plan to improve the health of its employees. There was a connection between the human resource department and the LMC; this relationship has room for improvement to expand the contact with the departments, establish advance requirements at open enrollment, and develop improved strategies to facilitate expanded marketing.

Process assessment of the current wellness navigator workflow guided revisions to meet improved outcome measures within the organizational structure, cultural appreciation, and economic developments. This project employed basic steps to assess the effectiveness of the wellness navigator role in its initial phase with how receptive or responsive employees were to the new HRA and connection with the WN. Subsequent steps could include plans to reach high to extreme high-risk groups and to increase rates of engaged employees to the LM services. Reaching and engaging high-risk populations with prediabetes and diabetes into LMC services to improve cost-effectiveness for employees and reduced premiums for the employer.

**Essential III: Clinical scholarship and analytical methods for EBP.** The importance of utilizing research and evidence-based practices to maintain the integrity of approaches to solution development for identified problems plays a role in the DNP project and future practice for DNP graduates. The literature review identified lifestyle medicine interventions were a gold standard for diabetes care and type 2 diabetes prevention (ADA, 2018; Arena, 2015; Powers et al., 2017). The evidence and research to support the next steps in program development gave the project grounds for validity. The health care organization had many significant aspects of lifestyle medicine services that were underutilized, even though the evidence showed that it improved wellness outcomes. One must delve deeper to analyze, assess, evaluate, and determine

a plan that could change a system from a culture of sick-being to a culture of well-being. From the information collected and assessed from the WN position, preliminary work could develop practice guidelines for future roles and revisions.

**Essential IV: Information systems/technology and patient care technology for the improvement and transformation of healthcare.** The world of technology and information systems are overwhelming and make it challenging for enhancements and changes to health care organizations. Technology can be complex and structured to meet the needs of some aspects of health and leaving other aspects of health care to resort to old styles of collecting information. The importance of protected health information is at the forefront of all health care information systems and patient care technology.

There were three electronic health care record systems that played into the formation of the DNP project. The occupational health management (OHM) system collected and protected the data on each employee as they completed their annual biometric screening. The OHM system was a secure system that did not communicate with the electronic health record (EHR). The OHM system transferred data securely to the Orthus Health® system. Orthus Health® was a secure system that only a few members of the LMC had access to (WN, LMC director, and coaches). It was a wellness portal that allowed access to the employee biometric data, KYN® number risk score, and health coaching on a variety of LM services. Orthus Health® was the primary system that the LMC utilized to track data. The EHR maintained secure access, and only those with privileges had access.

Due to the challenges of technology and system access, the DNP student maintained a secure Excel™ spreadsheet for the data points of interest. The Excel™ spreadsheet was rudimentary compared to what a wellness platform could deliver. The uncertainty of the Orthus

Health® timeline and its captured data may not have coordinated with the DNP student's timetable and required data. Challenges could arise when a health care system was looking for a new wellness platform, and they had ideas of the measured outcomes, parameters for data, functionality, and control but were not quite sure how it could function on a day to day basis. Wellness platforms contain many nuances that the company created and expected it to fit the needs of a health care organization. A new wellness platform does not always translate into the health care organization's wishes and wants for an ideal wellness platform.

**Essential V: Healthcare policy for advocacy in healthcare.** Often passions in areas of the health care world drive providers to question standards or become involved in areas of change. The DNP program at ECU prepared future leaders to engage in collaborative conversations that could lead to quality improvement changes. Leadership qualities, skills, and initiatives were vital aspects that played a role in advocacy and policy development at local, state, or national levels (AACN, 2006). At a local level, this project allowed the DNP student to assess and evaluate the issues and concerns that came up with each PDSA cycle with attention to detail. This perspective gave insight to quality assessment and improvement at a small scale that had the potential to develop into a larger-scale project. The project primed future doctorly prepared practitioners to have the leadership skills and knowledge to implement change. Advocacy to help educate stakeholders and people living with diabetes to adjust a health care system that managed care for people with prediabetes and diabetes. Healthcare policies within a health care organization could broaden their reach to include all chronic conditions that impact the health of the workforce and the bottom line of the employer.

**Essential VI: Interprofessional collaboration for improving patient and population health outcomes.** The DNP project worked towards developing collaborative relationships with

the team, marketing personnel, and managers within the health care organization. Collaborative efforts within the layers of the organization worked towards expanding the implemented practice, adjusting the policy for employee wellness, and included lifestyle medicine for diabetes prevention and management into the standards of care for all employees. Looking to community connections as lifestyle medicine interventions grow, and the employee population is part of our community that includes their family members that impact the well-being of our population health outcomes.

**Essential VII: Clinical prevention and population health for improving the nation's health.** Starting locally, in the health care system with employees was where this DNP project begins. When considering the impact prediabetes and diabetes have on individuals, the burden is not just with employees and employers. The burden has an influence on the local communities and surrounding rural areas that include the health care organization. If programs are not all-inclusive, they could then turn to be a more significant problem for health care organizations that ultimately must manage poorly controlled chronic conditions like diabetes.

Developing programs that promoted health and wellness for prevention and promotion of managing chronic conditions are strategies that need to be top of the priority. Having support at a state level promotes cohesiveness with structure, messaging, and cost savings to a system. Involvement with state initiatives that could bring national projects closer to home and expand in the health care system are ways to improve the nation's health, one person at a time. The Diabetes North Carolina (DNC, 2020) and Diabetes Free NC (DFNC, 2020) are working to increase public awareness for prediabetes and diabetes, improve information, and access to programs to decrease the burden of diabetes in NC. Reducing the burden of care for diabetes in each state could improve the quality of delivery, address social determinants of health, and

improve the health of the nation. Now is the time for future doctoral prepared practitioners to take an active role as change agents and decision-makers in leadership roles in areas that relate to social determinants of health and the well-being of populations in our society.

**Essential VIII: Advanced nursing practice.** Doctorally prepared practitioners are a unique sub-set of health care providers that bring a plethora of nursing experiences and skills, with a dynamic terminal degree. DNP education creates the optimal provider that uses evidence-based practice, reliable data to advance health care practices in a variety of settings. The advanced nursing practice could guide and drive system change with expert judgment, knowledge, and approaches that could improve care, address financial shortcomings while providing quality care that improved outcome measures.

### **Summary**

The *DNP Essentials* were critical components in completing this project. The organizational structure of the DNP project assessed and engaged members of the team at the micro-level within a department to the macro-level within the health care organization. Innovative technology, skill development, and a third-party wellness platform presented challenges that were addressed along the course of the project. Collaborative team approaches at multi-levels within the health care system were essential to increase employee wellness and engagement to lifestyle medicine services. The development of the DNP project from initial idea to fruition enhanced and enriched the educational experience for the DNP student. The DNP project provided insight into advancements and development for further improvement to the strategies for lifestyle medicine engagement within the employee population.

## **Chapter Eight: Final Conclusions**

The completed DNP project showcased the process assessment for connecting employees with prediabetes or diabetes to the Lifestyle Medicine Center (LMC) benefits. The following chapter will delve into the strengths and weaknesses of the project. This chapter will present significant findings and discuss current and future ideas that have the potential to substantiate cost savings for a health care organization and its employees with lifestyle modification options and improved health outcomes.

The purpose of this project was to assess and evaluate the efficacy of connecting employees with diabetes or prediabetes to the LMC. Offering lifestyle medicine interventions as an adjunct to primary care, diabetes prevention, and management has the potential to impact all components of the quadruple aim.

### **Significance of Findings**

The estimated predicted cost of diabetes at the health care organization in five years is \$17 million (Orthus Health, 2019). The estimated predicted avoidable value is \$15 million (Orthus Health, 2019). The avoidable cost was calculated based on employees participating in programs that empower people with lifestyle changes towards modifiable risky behaviors.

The LMC offers guidance for lifestyle changes to improve overall well-being. Behavioral changes impact biometrics like blood pressure, cholesterol, glucose, waist circumference, and weight. Healthier life choices like increased fruits and vegetables, whole, plant-based choices, better sleep hygiene, and reduce risky behaviors have the potential to change biometrics and delay T2D.

The LMC offers an opportunity to assist employees with lifestyle medicine changes that can lead to improved biometrics that decrease the overall risk of developing diabetes. The



development of a wellness initiative is only as good as it is recognized, perceived, received, and utilized by its intended target. Attempting to reach the employee population, especially the high-risk employees would be key to successful outcomes like decreased new diabetes and improved management of T2D.

The project findings indicated that the use of electronic email outreach was not the most effective approach in connecting employees to LMC services. The low response (15%) from the targeted outreach by electronic mails to those employees with prediabetes and undiagnosed diabetes gave reason to believe that it was not received, or employees did not care for the increased wellness information. Of those that did respond by making an appointment, a high percentage kept their appointment (82%). The appointment prompted an open dialogue with interested employees about their health risk score, prediabetes awareness, and LMC services.

The employee population that made appointments and kept them were encouraged to complete a prediabetes risk test. The majority of those that took the test were unaware of such a test and what the results meant. Of those that completed the prediabetes risk test, 38% of the population had a positive prediabetes risk test score of 5 or above. The prediabetes risk test was the start of conversations that encompassed the health belief model to increase awareness, understanding, and actionable plans for employees. There is a high propensity for those with a positive prediabetes risk test score could develop type 2 diabetes within five years if there were no changes to their lifestyle.

Almost a third of the outreach population (28%) that kept their appointments had a Know Your Number® (KYN) risk score that put them in the borderline high category. KYN® risk scores at or above borderline high risk put employees at added risk for developing chronic conditions like type 2 diabetes based on their modifiable lifestyle choices. The low number of

high-risk employees not captured with the targeted electronic email approach showed that the outreach needed revision or evaluation. Determining the best strategy to reach the highest risk employees could benefit the individual and the employer. The highest risk employees may have added comorbidities that impact their work performance, the cost to the health care organization, their finances, and their quality of life.

Referrals made after conversations with employees that kept their appointments were based on their personalized wellness goals. An analysis of the types of referrals made, the number of employees that became engaged with the LMC services would assist with staff expansion. The referral process could be evaluated to determine the best approach in connecting employees to LMC services when they are at a level of readiness for change. Future tracking of targeted outreach would be beneficial in modifying approaches to reaching a variety of levels of risk in the employee population to create environments towards prevention and management of chronic conditions.

During the time of the project implementation, the COVID-19 pandemic changed the structure of the health care organization and re-purposed the wellness navigator position. The process assessment project and project site did not receive the full attention or potential of what a fulltime position could do. The potential for this role could expand into more than initial outreach with structured guidelines and expectations in a future job description. During the project implementation, there was a time with two WN, a time with no WN, and finally, a Lifestyle Nurse Specialist was utilized. Taking on the role of WN gave new light to the role and insight into the prospective choices for the definition of the position. The lack of a WN position during a certain period of the project implementation went unnoticed as this was a very new role, and employees either did not know about it or had no expectations of the service.

## **Project Strengths and Weaknesses**

**Strengths.** The LMC had phenomenal resources available to the health care organization's employee population. The resources that include lifestyle medicine and behavioral components behind the concept are measures that are proven to help prevent or manage diabetes. These same resources are excellent solutions for the management and prevention of other avoidable chronic conditions like hypertension, hyperlipidemia, and obesity. Assisting employees to have the understanding and tools to make changes and develop habits that decrease health risks is a cost-savings measure for an employer and no cost to employees.

**Weaknesses.** There was a disconnect with lifestyle medicine services and programs offered and the number of engaged employees. Having a consistent message presented through the health care organization and the community would increase awareness, education, and availability. Employee engagement was lacking. The reasons for this could be one of many. There should be a further evaluation to determine cause and effect. The electronic health records were fragmented, creating frustration between documenting, data analysis, and evaluation.

## **Project Limitations**

There were several notable limitations to the project implementation. The limitations included staffing, marketing, workforce reduction, workflow reassignments, and modified workspace. At the time of the project implementation, there were interruptions to the original plan. Staffing was reduced to zero at one point due to maternity leave and COVID-19 restrictions at the health care organization. The elimination of the WN role for a short period led to decreased outreach and availability for appointments. Decreased connections with employees reduced the opportunities for conversations and the potential connections with lifestyle medicine interventions.

Marketing resources were re-routed to needs more specific to COVID-19 restrictions and closures. Decreased marketing efforts took away or delayed outreach efforts to the targeted population. Interruptions that led to workforce reduction and reassignment led to gaps in time spent in the outreach role. Working from a home base office presented its challenges with office equipment, connectivity to secure workstation, telephone network, and wellness navigator calendar.

### **Project Benefits**

Healthier employees have the underpinning potential for improved emotional well-being. Employees that feel good and have improved wellness habits create a healthier work environment with a decreased sickness-related financial burden. Improved health of a workforce promotes less absenteeism, presenteeism, sick time, and emergency room visits. The elements of a healthier workforce could lead to decreased health care costs for the employer.

The savings, if employees were to participate and change their biometric values, could lead to a healthier employee and recovered medical expenses to the employer. The health care system has the potential for considerable cost savings with Lifestyle Medicine Center initiatives for employees with prediabetes, diabetes, or other chronic conditions. The culture of health and wellness with respect to a health care organization is imperative to the care of its patients and community.

An appreciation of the process of lifestyle medicine changes to benefit employee engagement with their individualized health care needs would help promote successful connections with the LMC. An improved understanding of the overall health of the employee population with the use of the KYN® score, biometrics, and questionnaire could provide

additional information to guide the initial conversation and build employee-employer relationships.

### **Practice Recommendations**

The utilization of a fulltime wellness navigator with specific guidelines towards employee engagement would benefit increased connections to services. Sustained efforts through the lifestyle medicine clinic with adequate staffing in designated roles could provide cohesive efforts for improved employee wellness outcomes. Continued PDSA cycles to assess the effectiveness or ineffectiveness of outreach strategies could be a valuable tool in determining the success of this position and resource. Attempting alternative approaches to targeted outreach with letters or postcards with follow up telephone calls might be an option for those that were not viewing electronic mail.

The health risk assessment connected with the benefits package could work towards mandatory connections with the WN to review KYN® risk scores, work on wellness goals with follow-ups depending on the level of health risk. The required appointments could ensure health benefit premiums were received. Employees might not be as receptive to the LMC information if they were obligated to participate with the benefits service. There could be the idea that to save money; one would make the mandatory appointment but not be open to information as it was not an option.

Working on focus groups for those that are in the highest risk categories may be beneficial in understanding background and reasons for decreased participation for wellness appointments. Focus group information may help re-evaluate outreach methods and messaging to enhance employee benefits.

Setting guidelines for employees that are in the high or extreme high-risk group to connect them with a wellness navigator would ensure that they are connected. This project could be continued by looking at social determinants of health and if they play a part in those that respond to the electronic mail outreach approach and those that do not. The comparison of employees engaged or not engaged in one or more of the Lifestyle Medicine components over time with annual biometrics has the potential to show a return on investment.

Future DNP students interested in diabetes prevention or management with lifestyle medicine interventions could continue with a project that analyzed the referral process, the culture of wellness, health belief model for an employee-based population, or focus groups. There were a plethora of ideas for a scholarly project at this site in the realm of diabetes with lifestyle medicine, quadruple aim, and Healthy People 2030 in mind.

### **Final Summary**

Diabetes is a growing financial and health concern globally and locally. Currently, the number of people with diabetes is growing faster and more costly than the efforts to implement lifestyle medicine resources to help prevent or manage the condition. Preventing one person with prediabetes from being diagnosed with type 2 diabetes is a cost savings of approximately \$9,600 annually.

The projected five-year cost to the health care organization of approximately \$17 million should be enough to put forth alternative wellness resources. Added resources could aid in increased varieties of targeted outreach, developmental tools for diabetes and prediabetes lifestyle classes, extensive marketing campaigns to promote public awareness, and a system of dissemination that reaches multiple levels of employees in the health care organization. The

potential cost savings to the employer to decrease the number of employees with diabetes by offering services that impact lifestyle changes and modify behaviors is crucial for success.

The impetus for increasing awareness for the LMC and services that can influence lifestyle changes adds benefit to employee's overall health and the employer's health care costs. Behavioral changes that impact lifestyle are key elements in helping flatten the curve of diabetes.

The presence of lifestyle medicine practices has been on the bottom rung of health care for years. The future of health care needs to utilize evidence-based practice in lifestyle medicine to help in improving the health of the population and the cost of sickness. People understanding their options for medical care and treatment that does not involve medications or surgical interventions may find a motivating factor for change if they know it is there. The information about the services needs to be discussed, recognized, and mobilized to encourage employee participation throughout the health care organization. The idea of assisting employees with lifestyle medicine practices incorporates the components of the quadruple aim.

Just as hypertension is a silent killer, so too is type 2 diabetes (T2D). Getting ahead of a chronic condition like T2D before it needs costly medical interventions seems a better place to put wellness resources. Connecting employees with lifestyle change opportunities at the right time to engage in a component of lifestyle medicine practices is an element that has the potential for great success. Decreasing the severity of diabetes complications or delaying or preventing type 2 diabetes is a saving to the hospital system's medical and pharmaceutical plan. An empowered employee that understands the importance of healthier eating, moving more, reduced stress, decreased risky behaviors, has the potential to improve their health, their families, communities they live in, and their employer's bottom line.

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Appendix A

Literature Review

Article	Level of Evidence	Data/Evidence Findings	Conclusion or Summary	Use of Evidence in EBP Project Plan
<p>Ades, P. A., Savage, P. D., Marney, A. M., Harvey, J., &amp; Evans, K. A. (2015). Remission of recently diagnosed type 2 diabetes mellitus with weight loss and exercise. <i>Journal of Cardiopulmonary Rehabilitation and Prevention</i>, 35(3), 193-197. doi:10.1097/HCR.000000000000106</p>	<p>Level III</p>	<p>Implementing formal lifestyle program in overweight population with type 2 diabetes showed 9% body weight loss, with improved aerobic capacity, and mean HbA1C decreasing to &lt; 6.2%.</p>	<p>People recently diagnosed with type 2 diabetes that completed a formal lifestyle program achieved at least partial remission of condition 6 months in.</p>	<p>Strengths: a noted improved outcome program for motivated individuals as an option for type 2 diabetes treatment versus usual clinic care with metformin and diabetes educator. Limitations: short program, definition of remission, length of time people had diabetes diagnosis, use of randomized controls.</p>
<p>American College of Lifestyle Medicine. (2019). Retrieved from <a href="https://lifestylemedicine.org/ACLM/About/Mission_Vision/ACLM/About/Mission_Vision.aspx?hkey=0c26bcd1-f424-416a-9055-2e3af80777f6">https://lifestylemedicine.org/ACLM/About/Mission_Vision/ACLM/About/Mission_Vision.aspx?hkey=0c26bcd1-f424-416a-9055-2e3af80777f6</a></p>	<p>Level VII</p>	<p>American College of Lifestyle Medicine was founded in 2004 and is made up of health care professionals dedicated to instilling sustainable Lifestyle Medicine practice in clinics and worksite practices. According to ACLM (2019) it is one of the fastest growing fields in medicine. ACLM has 3,000+ members.</p>	<p>Has great structure to promote health reform by addressing root causes to chronic conditions.</p>	<p>Board certification in Lifestyle Medicine will help to support a growing area of health care and increase EBP to support development and sustainability.</p>
<p>American Diabetes Association. (2018). Economic costs of diabetes in the US in 2017. <i>Diabetes Care</i>, 41(5), 917-928. doi:10.2337/dci18-0007</p>	<p>Level VII</p>	<p>Costs of diabetes and treatment for the nation is rising.</p>	<p>Diabetes is expensive to the person living with it and the health care system. Medications are not always in the best interest of the patient with diabetes.</p>	<p>Lifestyle medicine has the potential to impact economic burden of diabetes.</p>

<p>Arena, R., Guazzi, M., Lianov, L., Whitsel, L., Berra, K., Lavie, C. J., . . . Shurney, D. (2015). Healthy lifestyle interventions to combat noncommunicable diseased. A novel nonhierarchical connectivity model for key stakeholders: A policy statement from the American Heart Association, European Society of Cardiology, European Association for Cardiovascular Prevention and Rehabilitation, and American College of Preventive Medicine. <i>Mayo Clinic Proceedings</i>, 90(8), 1082.</p>	<p>Level VII</p>	<p>New policy update to position statement for diabetes care and management.</p>	<p>Important to remember to discuss lifestyle interventions and medicine with patients so that they can make informed decisions to their care.</p>	<p>Including healthier lifestyle measures can have positive impact on type 2 diabetes management- improving population health, decreasing cost of care, and improving quality of life.</p>
<p>Asaad, G., Soria-Contreras, D. C., Bell, R. C., &amp; Chan, C. B. (2016). Effectiveness of a lifestyle intervention in patients with type 2 diabetes: The physical activity and nutrition for diabetes in Alberta (PANDA) trial. <i>Healthcare</i>, 4(4), 73. doi:10.3390/healthcare4040073</p>	<p>Level III</p>	<p>Implementing 4 week interactive nutrition program led to decreased A1C (-0.7%), BMI (-0.6kg/ m2), diastolic blood pressure (-4 mmHg), total cholesterol (-63 mg/dL), HDL- (+28 mg/dL) and LDL-cholesterol (-89 mg/dL), Healthy Eating Index (+2.1 score) and perceived dietary adherence (+8.5 score) (all p &lt; 0.05) at 3 month follow up.</p>	<p>Incorporating interactive education with 4 - week menu plan intervention according to the Canadian Diabetes Association nutrition guidelines to improve glycemic control.</p>	<p>Strengths: Menu planning added to educational program led to improved biometrics. Limits: though biometrics decreased there was no measure to changes to medication. Mainly focused on dietary measures.</p>
<p>Bodai, B. I., Nakata, T. E., Wong, W. T., Clark, D. R., Lawenda, S., Tsou, C., . . . Campbell, T. M. (2018;2017;). Lifestyle medicine: A brief review of its dramatic impact on health and survival. <i>The Permanente Journal</i>, 22, 17. doi:10.7812/TPP/17-025</p>	<p>Level VII</p>	<p>Discusses the impact of lifestyle medicine on chronic condition management with potential to improve population health and economic value.</p>	<p>Encouraging HCP to address and increase lifestyle medicine practice with established measures in their use of EBP in research. To instill sharing of information to assist other practitioners to build lifestyle medicine work into their practice as a standard of care. This strategy has the strength to improve health care economy and the health of populations.</p>	<p>Encouraging lifestyle medicine providers to act as a conduit to care- sharing ideas, methods, practices to improve this form of health care to build it as a standard of sustainable care. Limitations: need increased current EBP that support lifestyle medicine as not only adjunct to care, incorporated into algorithm of care for chronic condition management.</p>



<p>Botha, S., Forde, L., MacNaughton, S., Shearer, R., Lindsay, R., Sattar, N., . . . Logue, J. (2018). Effect of non-surgical weight management on weight and glycaemic control in people with type 2 diabetes: A comparison of interventional and non-interventional outcomes at 3 years. <i>Diabetes, Obesity and Metabolism</i>, 20(4), 879-888. doi:10.1111/dom.13171</p>	<p>Level III</p>	<p>Lifestyle weight management intervention for people with obesity and type 2 diabetes in Glasgow, UK with recommended clinical guidelines led to completers with successful weight loss (change at 3years -8.03kg; 95% confidence interval [CI] -9.44 to -6.62) than the non-completers (-3.26kg; 95% CI -4.01 to -2.51; P&lt;.001) and those not referred to the service (-1.00kg; 95% CI -1.15 to -0.85; P&lt;.001); and no increase to their diabetes medications or insulin over 3years.</p>	<p>A structured weight management intervention for people with diabetes can reduce weight which improved glycemic control with fewer medications and may be more effective than pharmacological alternatives.</p>	<p>Strengths: completing weight loss programs are beneficial on multi-levels to patient and health care system. Limitations: increasing number of participant referrals and program completers. Issues: access to care, time to complete programs, payers, system buy in, sustainability. Need investment in interventions, evaluations, improvement to show return on investment.</p>
<p>Centers for Disease Control and Prevention. (2018). Diabetes. National Diabetes Statistics Report, 2017. Estimates of Diabetes and Its Burden in the United States. Retrieved from <a href="https://www.cdc.gov/diabetes/data/statistics-report/index.html">https://www.cdc.gov/diabetes/data/statistics-report/index.html</a></p>	<p>Level VII</p>	<p>The burden of diabetes treatment and care is impacting individuals and economic health care dollars.</p>	<p>Diabetes is expensive to the person living with it and the health care system. Medications are not always in the best interest of the patient with diabetes.</p>	<p>Tackling the burden of diabetes in the US may be in line with making lifestyle medicine affordable to all. There may need to be a restructuring of health care dollars to sustainable living well programs to help the underserved populations and met the needs of health disparities.</p>
<p>Centers for Disease Control and Prevention. Division of Diabetes Translation. US Diabetes Surveillance System. (nd). Diagnosed Diabetes, Total, Adults with Diabetes, Age-Adjusted Percentage, Natural Breaks, All States, 2016. Retrieved from <a href="https://www.cdc.gov/diabetes/data">https://www.cdc.gov/diabetes/data</a></p>	<p>Level VII</p>	<p>The older the population gets the increase in the population of people with diabetes.</p>	<p>Lifestyle medicine helps people with chronic conditions where they are at in life and health.</p>	<p>Adjusting the care for people with diabetes throughout the lifespan is important. Lifestyle medicine needs to be accessible to Medicare and Medicaid recipients.</p>
<p>Centers for Disease Control and Prevention. (2018). National Diabetes Statistics Report. Retrieved from <a href="https://www.cdc.gov/diabetes/data/statistics/statistics-report.html">https://www.cdc.gov/diabetes/data/statistics/statistics-report.html</a></p>	<p>Level VII</p>	<p>Diabetes statistics for the nation.</p>	<p>Diabetes is a costly chronic condition and there are millions in the USA that need care. There is a growing concern for managing and treating diabetes.</p>	<p>Traditional treatment plans are in need of a revitalization and lifestyle medicine may be one adjunct to care that could help save health care dollars.</p>

<p>Dave, R., Davis, R., &amp; Davies, J. S. (2019). The impact of multiple lifestyle interventions on remission of type 2 diabetes mellitus within a clinical setting. <i>Obesity Medicine, 13</i>, 59-64. doi:10.1016/j.obmed.2019.01.005</p>	<p>Level VII</p>	<p>Multiple lifestyle interventions in a clinical setting showed at the end of one -weight loss (&gt; 10% body weight loss = 26.8%, 5-10%=20%, &lt; 5%= 44.4%, weight gain=8.8%), and 77.8% remission of diabetes. Treatment cost savings \$189/patient/year.</p>	<p>Multiple lifestyle interventions (LSI) for people with type 2 diabetes led to weight loss, improved glycemic control, diabetes remission, and decreased medication cost.</p>	<p>Strengths: weight loss, diabetes remission, decreased medication cost strategies could be implemented into routine clinical practice. T2D can be managed with lifestyle interventions but need to motivate, encourage, and empower engaged individuals for its outcome success. Lifestyle medicine/interventions are noted for safety, efficacy, and cost effectiveness. Limitations: small group, south Asian population not necessarily comparable to US population due to lower BMI genetic propensity to T2D.</p>
<p>Davies, M. J., D'Alessio, D. A., Fradkin, J., Kernan, W. N., Mathieu, C., Mingrone, G., . . . Buse, J. B. (2018). Management of hyperglycemia in type 2 diabetes, 2018. A consensus report by the American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD). <i>Diabetes Care, 41</i>(12), 2669-2701. doi:10.2337/dci18-0033</p>	<p>Level VII</p>	<p>The American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD) new recommendations in position statements include additional focus on lifestyle management and diabetes self-management education and support (DSMES). Obesity efforts are targeted at weight loss with lifestyle, medication, and surgical intervention.</p>	<p>Patient centered care needs to stay main focus with building and supporting improved "diet and exercise" strategies as the main foundation for all glycemic management. It is at the top of the T2D algorithm, it just does not get the same prescribing power or speed in lowering lab values as pharmaceutical agents.</p>	<p>Strengths: Principles of Care-providers should prioritize delivery of patient centered care, DSMES-all patients with diabetes should be offered access to ongoing DSMES programs, Limitations: Effective innovations are lagging behind. Lifestyle management- only considered dietary aspect - did not include aspects of lifestyle medicine: emotional, smoking cessation, or sleep hygiene. Lifestyle management and DSMES require clear, improved paradigms on how to target, individualize and sustain effects. Patient centered care needs to stay main focus with building and supporting improved "diet and exercise" strategies as the main foundation for all glycemic management.</p>
<p>Delahanty, L. M., Dalton, K. M., Porneala, B., Chang, Y., Goldman, V. M., Levy, D., . . . Wexler, D. J. (2015). Improving diabetes outcomes through lifestyle change – A randomized controlled trial. <i>Obesity, 23</i>(9), 1792-1799. doi:10.1002/oby.21172</p>	<p>Level II</p>	<p>Randomized control comparison for diabetes group lifestyle intervention (GLI) with dietitian referral medical nutrition therapy (MNT) for weight loss in primary care setting showed At 6 months, 46% of GLI vs. 21% of RD lost 5% body weight (P 5 0.04), with mean weight loss 6.6 (SD 7.0) kg with GLI and 2.1 (3.5) kg in RD (P 5 0.004).</p>	<p>Group lifestyle interventions have a place in the diabetes treatment plan and show results with potential to decrease costs of care for patient and health care system.</p>	<p>Include GLI in primary care setting to improve patient care, satisfaction, and impact clinical outcomes.</p>

<p>Franz, M. J., Boucher, J. L., Rutten-Ramos, S., &amp; VanWormer, J. J. (2015). Lifestyle weight-loss intervention outcomes in overweight and obese adults with type 2 diabetes: A systematic review and meta-analysis of randomized clinical trials. <i>Journal of the Academy of Nutrition and Dietetics</i>, 115(9), 1447.</p>	<p>Level I</p>	<p>Randomized clinical trial that implemented weight-loss interventions in overweight or obese adults with type 2 diabetes for minimum 12-month study duration, and a 70% completion rate, and an HbA1c value reported at 12 months showed 5% weight loss needed to have beneficial effects on HbA1C, lipids, blood pressure.</p>	<p>Achieving this level of weight loss requires intense interventions, including energy restriction, regular physical activity, and frequent contact with health professionals.</p>	<p>Strengths: including lifestyle weight-loss interventions for overweight and obese T2D has potential to decrease biometrics, with improved glycemic control and need for additional diabetes medications. Weight loss may not be the prime treatment strategy for all people with diabetes that are overweight or obese trying to obtain glycemic control.</p>
<p>Gamiochipi, M., Cruz, M., Kumate, J., Wachter, N. H., &amp; DIMSS Study Group. (2016). Effect of an intensive metabolic control lifestyle intervention in type-2 diabetes patients. <i>Patient Education and Counseling</i>, 99(7), 1184-1189. doi:10.1016/j.pec.2016.01.017</p>	<p>Level II</p>	<p>Intensive lifestyle intervention (behavior change) may be more effective for weight loss and A1C control compared to educational intervention. Twice as many participants achieved at least 5% weight reduction,</p>	<p>Modest weight loss with consultative group lifestyle interventions can lead to lowered A1C and diastolic blood pressure levels.</p>	<p>Strength- the power of intensive lifestyle intervention impacts weight that leads to reduction in A1C. Weakness - did not pay attention to medication dosing during the trial and at follow up. No changes were made to their drug treatment during the follow/up. Little input from practice providers. Suggesting that any lifestyle intervention needs to be a collaborative approach. Shows the importance of systematic application of behavioral modification that needs to be all-inclusive with special attention to the individual.</p>

<p>Johansen, M. Y., MacDonald, C. S., Hansen, K. B., Karstoft, K., Christensen, R., Pedersen, M., . . . Ried-Larsen, M. (2017). Effect of an intensive lifestyle intervention on glycemic control in patients with type 2 diabetes: A randomized clinical trial. <i>JAMA</i>, 318(7), 637-646. doi:10.1001/jama.2017.10169</p>	<p>Level II</p>	<p>Intensive lifestyle interventions (5-6 weekly aerobic training sessions, with resistance training, dietary plans) along with standard care (individual counseling and medical therapy) versus standard care over 12 months did not show significant findings in HbA1C changes. Majority of participants completed the study with minimal significance to A1C reduction, though 73.5% had decrease in glucose lowering agents as secondary outcome. Standard of care showed that diabetes medications increased by 44.1%</p>	<p>Intensive lifestyle interventions with standard care have potential to lower amount of diabetes medications for management even if there is a small reduction in A1C.</p>	<p>Location: New Zealand and Denmark. Standard of care for diabetes management needs to instill lifestyle intervention education for patients to have a grasp/understanding of their options. Patients would benefit from intensified lifestyle interventions implemented into their plan of care at every visit. Further research needed to evaluate HbA1C reduction with lifestyle interventions.</p>
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<p>Katula, J. A., Kirk, J. K., Pedley, C. F., Savoca, M. R., Effoe, V. S., Bell, R. A., . . . LIFT Diabetes Team. (2017). The lifestyle intervention for the treatment of diabetes study (LIFT diabetes): Design and baseline characteristics for a randomized translational trial to improve control of cardiovascular disease risk factors. <i>Contemporary Clinical Trials</i>, 53, 89-99. doi:10.1016/j.cct.2016.12.005</p>	<p>Level II</p>	<p>With the use of a community-based lifestyle weight loss (LWL) intervention adapted from Look AHEAD for 12 and 24-months the impact showed decreased use of glucose-lowering medications by 73.5% in the lifestyle group and 26.4% in the standard care group. And other secondary outcomes included improved changes to body weight, physical activity, medication use, cost, resource utilization, and safety.</p>	<p>Translating evidence-based, lifestyle strategies, and targeting minority and underserved patients, will yield, if successful, a model for addressing the burden of diabetes and may favorably impact health disparities.</p>	<p>Strength: presents a model of care to assist with the burden of diabetes with a great impact on health disparities. Utilizing a translated for of the Diabetes Prevention Program assisted in a platform of care for community health workers to aid in improving diabetes care management outcomes. There is room for partnership building between clinical and community resources. Decreasing care costs with utilization of CHW for educational sessions over the year. Prime outcomes with attention to cardiovascular diseases and secondary outcomes focusing on risk factor control, social cognitive steps, financial bottom line, and resource utilization. Limitations: who is paying for programs to continue at a primary care level and is there room for sustainability?</p>
<p>Knowler, W. C., Barrett-Connor, E., Fowler, S. E., Hamman, R. F., Lachin, J. M., Walker, E. A., . . . Diabetes Prevention Program Research Group. (2002). Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin. <i>The New England Journal of Medicine</i>, 346(6), 393-403. doi:10.1056/NEJMoa012512</p>	<p>Level VII</p>	<p>Large clinical trial compared changes in diet and physical activity with metformin in preventing diabetes for those at high risk. Lifestyle intervention more effective than the medication.</p>	<p>Lifestyle interventions are just as beneficial if not more than medications to prevent type 2 diabetes. The power of exercise and nutrition can combat chronic conditions like type 2 diabetes if it is prescribed, discussed with patient.</p>	<p>The landmark DPP study set the stage for future projects, programs, and research based on lifestyle interventions to include nutrition, exercise, stress management, sleep hygiene that can successfully prevent type 2 diabetes. The year-long lifestyle changing program with a CDC approved curriculum beats a medication in helping prevent a chronic condition. This same program would benefit the people living with type 2 diabetes whether they are overweight or not as the 2 main goals are 150 minutes of exercise /week and 5% weight loss and maintenance.</p>

<p>Lanhers, C., Walther, G., Chapier, R., Lesourd, B., Naughton, G., Pereira, B., . . . Dutheil, F. (2017). Long-term cost reduction of routine medications following a residential programme combining physical activity and nutrition in the treatment of type 2 diabetes: A prospective cohort study. <i>BMJ Open</i>, 7(4), e013763-e013763. doi:10.1136/bmjopen-2016-013763</p>		<p>Extreme lifestyle interventions with a 3-week residential program (high exercise volume: 15-20 hours/week exercise, restrictive diet (- 500kcal/day) and education showed at one year 54% stopped/decreased their medications, number of pills were decreased along with the expense.</p>	<p>Extreme lifestyle interventions can have an impact on number of diabetes medications and improved glycemic control independent of weight changes.</p>	<p>Limitations: May not be for the overweight population. Costly program. Hard for people to get 150 minutes of exercise / week into their routine especially if they are overweight. Extreme measures not suitable for all populations. Limitations: study conducted at spa resort in France, was for stable weight T2D population.</p>
<p>Lean, M. E. J., Leslie, W. S., Barnes, A. C., Brosnahan, N., Thom, G., McCombie, L., . . . Taylor, R. (2019). Durability of a primary care-led weight-management intervention for remission of type 2 diabetes: 2-year results of the DiRECT open-label, cluster-randomised trial. <i>The Lancet Diabetes &amp; Endocrinology</i>, 7(5), 344-355. doi:10.1016/S2213-8587(19)30068-3</p>	<p>Level II</p>	<p>With the use of total supervised food reduction for 12-20 weeks with food replacements and then slow reintroduction to food along with structured support for weight loss showed 46% intervention people with type 2 diabetes in remission with A1C &lt; 6.5% with anti-diabetes medications withdrawn at baseline. with slow</p>	<p>Restricted caloric intake for a period of time can have significant impact on weight reduction that may assist with remission of diabetes.</p>	<p>Limitations: short termed study, would be interesting to see 5, 10 20 years outcomes. Challenges with restricted caloric intake with use of meal replacement products. Strengths: Diabetes remission is possible with sustainable weight loss, may be dependent on length of diabetes diagnosis and function of pancreas.</p>
<p>Mechanick, J. I., &amp; Kushner, R. F., 1953. (2016). Lifestyle medicine: A manual for clinical practice. Cham, Switzerland: Springer International Publishing Switzerland.</p>	<p>Text</p>	<p>One's lifestyle dictates in most cases the state of our health, wellness, and prevention of disease.</p>	<p>Lifestyle medicine will be an important cornerstone to care for staying well and treating chronic conditions that have not had lifestyle prescriptions as a focus to care.</p>	<p>EBP to back lifestyle medicine are key elements in successful outcomes for future plans of care for dealing with an increased amount of people with chronic conditions.</p>

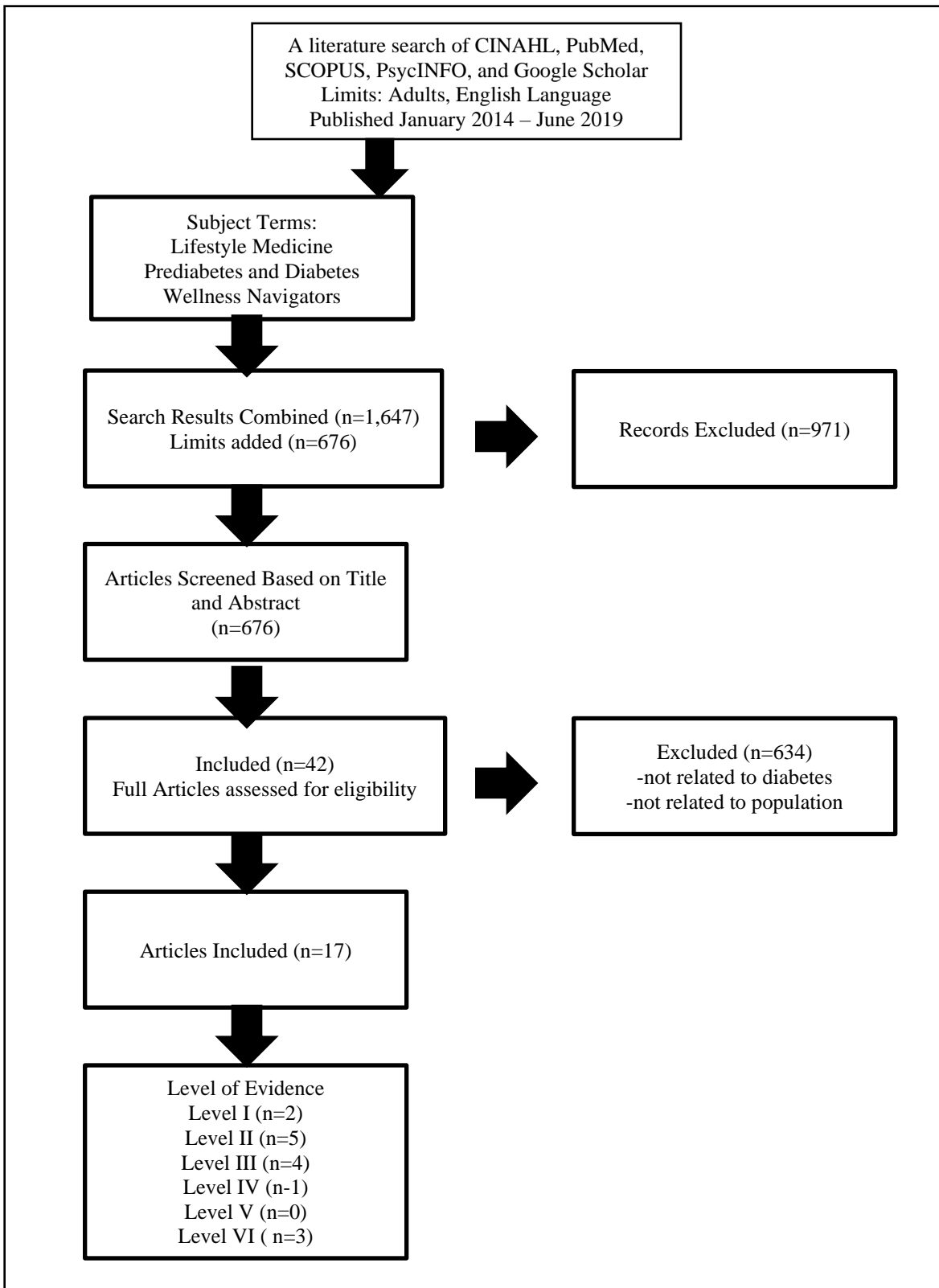
<p>Mladenovic, A. B., Wozniak, L., Plotnikoff, R. C., Johnson, J. A., &amp; Johnson, S. T. (2014). Social support, self-efficacy and motivation: A qualitative study of the journey through HEALD (healthy eating and active living for diabetes). <i>Practical Diabetes</i>, 31(9), 370-374. doi:10.1002/pdi.1905</p>	<p>Level VI</p>	<p>People with type 2 diabetes report self-efficacy and motivation to exercise with a group of peers and exercise specialists.</p>	<p>Participants felt supported by peers and exercise specialist during program with self-efficacy and motivation.</p>	<p>Limitations: when program was over the benefits during the program were compromised. Used self-reporting data. There is a need for continued community programming that supports chronic condition management. The potential for effective behavioral change in a primary care setting is possible though it needs continued maintenance, guidance, and funding to support specific positions for innovative, sustainable lifestyle change programs. Social support systems are important to healthy living.</p>
<p>National Institute of Health. (2017). Diabetes. Diabetes Overview. What is Diabetes? Retrieved from <a href="https://www.niddk.nih.gov/health-information/diabetes/overview/what-is-diabetes">https://www.niddk.nih.gov/health-information/diabetes/overview/what-is-diabetes</a></p>	<p>Level VII</p>	<p>Diabetes definition and care.</p>	<p>It is possible that type 2 diabetes can be managed with weight loss strategies in most cases depending on years of diagnosis and function of the pancreas.</p>	<p>Understanding dynamics of diabetes is the foundation to improving care with lifestyle medicine. Awareness of the connection with obesity and type 2 diabetes aids practitioners in formulating a plan that is conducive to weight loss and maintenance.</p>
<p>Office of Disease Prevention and Health Promotion. (2019). Healthy People 2020. 2020 LHI Topics. Retrieved from <a href="https://www.healthypeople.gov/2020/leading-health-indicators/2020-LHI-Topics">https://www.healthypeople.gov/2020/leading-health-indicators/2020-LHI-Topics</a></p>	<p>Level VII</p>	<p>High levels of obesity, type 2 diabetes, sedentary living.</p>	<p>Nutrition, Physical Activity, and Obesity, and Diabetes management for people &gt;9% A1C.</p>	<p>Decrease obesity rates- with exercise, nutrition to help manage type 2 diabetes</p>
<p>Pot, G. K., Battjes-Fries, M. C., Patijn, O. N., Pijl, H., Witkamp, R. F., de Visser, M., . . . Voshol, P. J. (2019). Nutrition and lifestyle intervention in type 2 diabetes: Pilot study in the Netherlands showing improved glucose control and reduction in glucose lowering medication. <i>BMJ Nutrition, Prevention &amp; Health</i>, bmjnph-2018-000012. doi:10.1136/bmjnph-2018-000012</p>	<p>Level IV</p>	<p>Conducting 6-month pilot for type 2 diabetes participants with nutrition and lifestyle interventions lowered HbA1C levels for 60% of the participants and 49% of participants had reduced or eliminated their diabetes medication. 11 participants were able to come off insulin. Secondary outcomes showed improved fasting glucose, body weight, waist circumference, and improved quality of life.</p>	<p>A 6-month multicomponent outpatient group-based nutrition and lifestyle intervention program for type 2 diabetes has the potential to improve glycemic control and reduce diabetes medications in engaged participants.</p>	<p>Strengths: Intensive lifestyle and nutrition interventions can decrease dose or number of diabetes medications. Sustained remission of diabetes and medication administration can lower health care costs for patients and health care systems. Normalized glucose can lead to improved comorbidity complications.</p>

<p>Rosas, Lisa G., Lv, N., Azar, Kristen, Xiao, L., Yank, V., &amp; Ma, Jun. (2015). Applying the Pragmatic–Explanatory continuum indicator summary model in a primary Care–Based lifestyle intervention trial. <i>American Journal of Preventive Medicine</i>, 49(3), S208-S214. doi:10.1016/j.amepre.2015.05.011</p>	<p>Level VII</p>	<p>The use of the E-LITE (Elevation of Lifestyle Interventions to Treat Elevated Cardiometabolic Risk in Primary Care) trial design showed that the coach-led intervention group had a higher amount of weight loss than the self-directed.</p>	<p>Utilizing the PRECIS (Pragmatic-Explanatory Continuum indicator Summary) framework with best practices from the E-LITE (Elevation of Lifestyle Interventions to Treat Elevated Cardiometabolic Risk in Primary Care) trial could build partnerships and engage stakeholders for the development of sustainable lifestyle intervention programs in primary care.</p>	<p>The EBP guidelines outlined by PRECIS and in E-LITE trial could be translated into primary care practices for type 2 diabetes management and care.</p>
<p>Sbroma Tomaro, E., Pippi, R., Reginato, E., Aiello, C., Buratta, L., Mazzeschi, C., . . . De Feo, P. (2017). Intensive lifestyle intervention is particularly advantageous in poorly controlled type 2 diabetes. <i>Nutrition, Metabolism and Cardiovascular Diseases</i>, 27(8), 688-694. doi:10.1016/j.numecd.2017.06.009</p>	<p>Level IV</p>	<p>A 3-month structured multidisciplinary lifestyle intervention showed improved at the end and at two-year follow up for HbA1C, glucose, BMI, waist circumference, and systolic blood pressure.</p>	<p>Recommending and guiding patients to and through a lifestyle intervention program has beneficial outcomes for people with type 2 diabetes and should always be suggested or prescribed.</p>	<p>Utilizing intensive lifestyle interventions should always be recommended and followed up by providers to potentially aid in decreasing the need for more aggressive pharmacological treatment. Uncontrolled type 2 diabetes with lifestyle interventions have the potential to see a more significant improvement to glucose and A1C.</p>



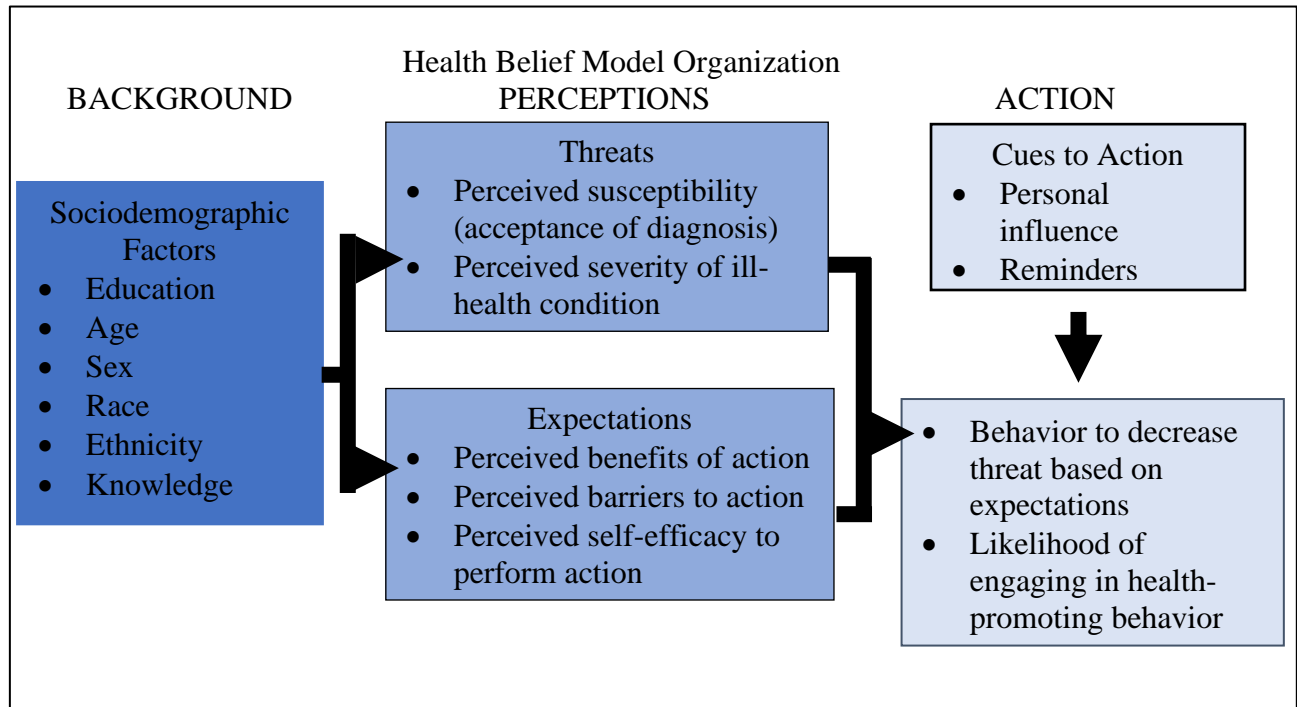
Appendix B

PRISMA for DNP Project



## Appendix C

## Health Belief Model of Organization



Adapted from Sugg Skinner, C., Tiro, J., & Champion, V. L. (2015). The health belief model. In K. Glanz, B. K. Rimer, & K. Viswanath (Ed). *Health behavior: Theory, research, and practice* (5<sup>th</sup> ed., pp. 75-80). San Francisco, California: Jossey-Bass.

Appendix D

Annual Health Risk Assessment Messaging

2020 Annual Health Risk Assessment

1



If you are new to using the Wellness Portal enter the information below to register your account:
» Employer Code: VIDANT
» Last Name
» Participant ID: Your Vidant Employee ID Number (Without E)
» Date of Birth: MM/DD/YYYY
Accept the terms of use. Create a Username and Password and enter your email.

2

Complete your Know Your Number (KYN) Questionnaire



3

Complete your WellScreen

Health provides WellScreens during pre-employment and annual Occupational Health visits. The biometric data from your WellScreen will be loaded directly into the Know Your Number questionnaire to provide you a more complete summary of your health risks.

Once you complete the WellScreen and KYN questionnaire, you will receive an email to access your report. Contact to get involved in other wellness benefits and services.

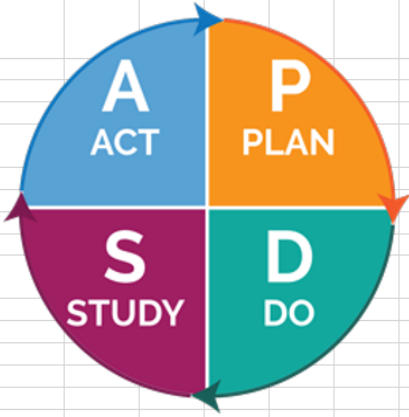
Wellness Premium Incentive
Team members who do not complete the Know Your Number Questionnaire AND WellScreen by September 30, 2020, will pay an additional \$25 per pay period if they enroll in the Plan for 2021.

Technical Support & Password Resets Call Orthus Health at 1.800.550.2427
FAQ about Health Risk Assessment & Wellness Portal:
If you have questions not addressed in the FAQ, email



Appendix E

PDSA #

<b>PDSA#: 01/20-2/14/2020</b> <b>PLAN</b>	
<p><b>Describe the target change:</b>                  To connect Wellness Navigators (WNs) with high risk employees (prediabetes or undiagnosed diabetes) according to their Know Your Numbers (KYN) from their annual screening from fiscal year 2019. the awareness and number employees with prediabetes or diabetes in</p> <p><b>List the tasks needed to execute this change:</b>                  Connect with Orthus Representative.                  Wellness Navigator connected to Orthus - wellness platform                  Wellness Navigator connected to Calendly- self scheduling/populating calendar for employees to connect with Wellness Navigator                  Wellness Navigator to set up Outlook calendar for timed appointment slots for 15 minutes                  Compile email list of the highest risk individuals with either prediabetes or undiagnosed diabetes                  Marketing to construct email with connection to Calendly scheduler to Wellness Navigators calendar</p> <p><b>Predict what will happen during this time:</b>                  Employees will make appointments on Calendly to speak to Wellness Navigator about their well-being and wellness goals                  WN may not get any responses as employees do not always have access to their email.                  WN may be overwhelmed with responses.                  Employees may not read their email.                  Employees are not interested in the wellness services.                  WN may reach the usual people that are interested in their health, not the highest of the high risk population.</p> <p><b>People Involved:</b>                  LM director, WN #1, Marketing, DNP student</p> <p><b>Start Date:</b> 1/20/2020  <b>End Date:</b> 2/14/2020</p>	
<b>DO</b>	
<p><b>Describe what actually happened:</b>                  The master email to be sent out at the start date was delayed due to miscommunication with Orthus.                  LM-Wellness Team received names without the email addresses of the people with prediabetes and undiagnosed diabetes.                  This delayed the outreach process to 1/22/20 (Oct, Nov, Dec) and 1/24/20 (prediabetes/undiagnosis)                  From 1/20/2020 to 2/10/2020 data was collected on the Wellness Navigator process along with documentation for each employee in their Orthus chart for each employee.                  Wellness Navigators either spoke with employees at their designated Calendly appointment time, rescheduled appointment times, left a message, or were unable to make any contact.                  Wellness Navigators collected data each day to include: number of calendly appointments, number of employees reached, prediabetes risk test score, referral to LM services- yes or no.</p>	
<b>STUDY</b>	
<p><b>Describe how the results compared to the predictions. Did you meet your measurement goal?</b>                  Emails sent out n= 1912 Combination of those that completed HRA Oct/Nov/Dec2019 (n= 340) + those with prediabetes(n=1303) and undiagnosed diabetes (n=269)                  Appointments made on Calendly with the Wellness Navigator= 105 (5.5% of the population emailed)                  Connections made with Wellness Navigator from the Calendly appointments = 90 (85.7% of those that made appointments)                  # with diabetes = 10 (9.5% of those that connected with Wellness Navigator)                  # with prediabetes risk score &gt;5= 34 (32.3% of those that connected with the Wellness Navigator)                  # of referrals= 17 (16.9% of those that connected with the Wellness Navigator)                  # of employees with KYN &gt;60 =8.6%</p>	
<b>ACT</b>	
<p><b>What did you learn? What changes will you make to the plan for the next cycle?</b>                  Appointment times were between 8am and 5pm with breaks through the day                  Initially WN were not collecting data for type of referral within LM services                  to keep track of what departments employees were referred to.                  to think about having a follow up appointment to find out how they are doing, did they get connected with the appointment, etc.                  There was only 1 WN at the start of this process and she was familiar with the environment, the programs, and the logistics.                  WN#1 - will be going out on maternity leave                  WN#2 -is just starting her position and settling into a new system and will take some time to get up and running</p> <p>Moving forward, the WN#1 will train the WN#2 as the fulltime position. 2 supplemental staff are in place acting as WN#3 and WN#4. They will work very part time.                  To improve the flow of connectivity WN#2 has worked with the LM director, the WN#1, the lifestyle coaches to get a feel for their positions, what they do, and how it can impact employees and their well-being.                  The Calendly appointments will be spaced out a bit to allow WN#2 adequate time to prepare for the phone visit, discuss HRA details, explain services and referrals, along with documentation in Orthus and data tracking for DNP student project.                  For DNP project and PDSA#1 -To ensure WNs are including the KYN score and referral details - mainly what department they were referred to (eg. Nutrition, not needed- name of RD, date and time of appointment)</p> <p>Recommended changes: 1)timing for new WN#2 appointments, 2)adding KYN score, 3) adding referral department for employees</p>	

Appendix F

DNP Project Cost Analysis

Strategies for Lifestyle Medicine Center Engagement for an Employee Population with Diabetes or Prediabetes							
Line Item			Unit Cost	Quantity	Total		
Office Supplies							
	Paper (1 ream)		\$12.00	1	\$12.00		
	Clipboard		\$3.00	1	\$3.00		
	Legal Pads (10)		\$8.00	1	\$8.00		
	Pens (12)		\$6.00	1	\$6.00		
Total Expenses					\$29.00		

Appendix G

Organizational Approval Letter per ECU DNP program



September 26, 2019

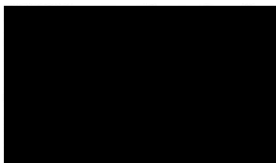
To East Carolina University College of Nursing:

We at [REDACTED] have reviewed Susan Houston's DNP Project Proposal "***Strategies for Lifestyle Medicine Center Engagement for an Employee Population with Diabetes or Prediabetes***". Ms. Susan Houston has organizational support and approval to conduct their Doctor of Nursing Practice student project within our institution(s). Our organization's liaison, or project champion, for the project is [REDACTED]

We understand that the timeframe for this project is from the date of this letter through August 1, 2020. Implementation at the project site will occur January 2020 through April 2020, unless otherwise negotiated. We understand that for Ms. Houston to achieve completion of the DNP program, dissemination of the project is required by the University and will include a public presentation related to the project and submission to the ECU digital repository, The ScholarShip. In addition, we understand that ECU College of Nursing encourages students completing exemplary scholarship to develop a manuscript for publication, but that is not a requirement. Our organization understands and agrees that the student will not use our organization's name in the formal project paper or any subsequent posters, presentations, or publications.

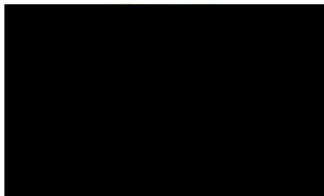
Our organization has deemed this project as a process assessment project. Our organization is aware that this project will be processed first through our organizational approval process and then through the ECU College of Nursing process, which may include a formal review through University and Medical Center Institutional Review Board of East Carolina University (UMCIRB), if needed. Our organization *does* have an Institutional Review Board (IRB). We are aware that in the absence of an organizational IRB, the project will be submitted through the ECU College of Nursing review process which may include UMCIRB review if needed.

Thank you,



## Appendix H

## Organizational Approval Letter per [REDACTED] Center for Research and Grants



November 8, 2019

To East Carolina University College of Nursing:

On behalf of [REDACTED], we are pleased to provide a letter of support and approval for Mrs. Susan Houston to conduct her Doctor of Nursing Practice (DNP) student project entitled, "*Strategies for Lifestyle Medicine Center Engagement for an Employee Population with Diabetes or Prediabetes*" within our institution(s).

We embrace opportunities to support our team members in their pursuit of knowledge through education and research. These efforts provide an opportunity for us to further improve the care we provide throughout the [REDACTED] system. Mrs. [REDACTED] has agreed to serve as Mrs. Houston's liaison and project champion. It is our understanding that the time frame for the project is from the date of this letter through August 1, 2020, and that implementation at the site will occur January 2020 – April 2020. We are willing to support Mrs. Houston through this process, and we understand the requirements listed below.

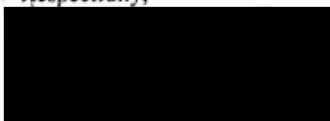
- As a requirement for completion of the DNP program, dissemination of the project is required by the University and will include a public presentation related to the project and submission to the ECU digital repository [*The ScholarShip*].
- The ECU College of Nursing encourages students completing exemplary scholarship to develop a manuscript for publication, but that it is not a requirement.
- Mrs. Houston will not use our organization's name in the formal project paper or any subsequent posters, presentations, or publications.

Further, our organization has deemed this project as a process assessment project. We understand that it will be processed first through our organizational approval process and then through the ECU College of Nursing process. This process may include a formal review through the University and Medical Center Institutional Review Board of East Carolina University (UMCIRB).

Through our *Center for Research and Grants*, under the direction of [REDACTED] NIC, IBCLC, we will work with Mrs. Houston to ensure that the study is completed according to company guidelines, and that resources are available to ensure compliance, including supporting her through the IRB process. Should you publish your findings, Dr. [REDACTED] and her team will be available to provide guidance.

We look forward to working with Mrs. Houston to complete this significant phase in her career. Please feel free to reach out to Mrs. [REDACTED], if additional information regarding our commitment is required.

Respectfully,



Appendix I

Human Research Determination Worksheet per Vidant Center for Research and Grants

**Human Research Determination Worksheet**

Use this worksheet to help determine whether a proposed activity or project involving human subjects or their identifiable private information/biospecimens is considered research needing IRB review.

	True	False
The PRIMARY purpose of the proposed activity or project is limited to 1) implementing a standard practice to improve the quality of patient care and to collect data regarding that implementation for clinical, practical, or administrative purposes, and/or 2) delivering healthcare and measuring and reporting provider performance data for clinical, practical, or administrative uses.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
The activity or project would be carried out even if there was <u>no</u> possibility of publication in a journal or presentation at an academic meeting. (*Please note that answering "True" to this statement does not preclude publication of non-research activities. The SQUIRE Website has numerous useful tools and guidelines for those doing Quality Improvement work.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
The activity or project falls under well-accepted care practices/guidelines and are designed to bring about immediate improvements in health delivery or quality of care.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
The activity or project involves "no more than minimal risk" procedures. (i.e., the probability and magnitude of harm or discomfort anticipated are not greater in and of themselves than those ordinarily encountered in daily life or during the performance of routine physical or psychological examinations or tests).	<input checked="" type="checkbox"/>	<input type="checkbox"/>

If any of the above answers is "False", a submission for IRB approval is most likely needed. If all the above answers are "True", then it is very likely that IRB approval is not required. Please contact the University and Medical Center Institutional Review Board (UMCIRB) with any questions at 252-744-2914 or [umcirb@ecu.edu](mailto:umcirb@ecu.edu). More information about quality activities versus human research can be found on the [Office for Human Research Protections \(OHRP\) website](#).

If you need the UMCIRB office to verify that an activity or project is not human subject research, please complete and provide this form to [umcirb@ecu.edu](mailto:umcirb@ecu.edu) and the determination below will be completed and returned to you for your records.

**Project title:** Strategies for Lifestyle Medicine Center Engagement for an Employee Population with Diabetes or Prediabetes

**Name/contact information of project leader:** Susan Houston

Summary of activity including information about project aims/objectives, methods for carrying out the project and information about data to be collected (attach any supporting documents that might assist in a determination):

The proposed DNP project is a process assessment project to strategize and develop a systematic approach to reach and connect a high-risk employee population with prediabetes/diabetes with the Lifestyle Medicine Center. The project will assess the evaluation process of the hospital systems health risk assessment (HRA) data to determine a screening process for defining eligibility for enrollment in the Lifestyle Medicine Center. The steps involve the annual HRA screening evaluation, a calculated reach out, an employee response, a behavioral readiness screening tool, and a final inclusion or exclusion criteria for the Lifestyle Medicine Center enrollment. The goal of the proposed DNP project is to evaluate the process of a high-risk population to an engaged participant selection process for an adjunct to care at the Lifestyle Medicine Center. The site for the DNP project is the Wellness Department of the hospital system's employee high-risk population with diabetes or prediabetes in Eastern North Carolina.

**Site Approval:**

Provide the name and title of the person in charge of the area where the project will be carried out (this should be someone in a position to make decisions for the site):

Signature:   
Administrator

This person is attesting that the project is a quality project that is commissioned or supported by the site.


Signature of site approver: 

\*\*\* The UMCIRB office will contact you if any further information is needed to make this determination. Please note that if the UMCIRB office determines the activity is not human subject research, then any presentation, publication, etc. should not refer to the activity as such.

**Determination:**

Not Human Research: The UMCIRB office has determined that based on the description of the project, approval by the IRB is not necessary. Any changes or modifications to this project may be discussed with the UMCIRB office at that time to ensure those changes do not elevate the project to human research that would need IRB approval.

Human Research: This project requires review by the IRB prior to initiation. An application in the electronic IRB submission system should be submitted.

UMCIRB Office Staff Signature:  Date: 12-3-19



Appendix J

Principal Investigator Agreement per [REDACTED] Center for Research and Grants



Principal Investigator (PI) Agreement

Applicant Name: Susan Houston  
 Title: Lifestyle Coach - Nurse  
 Department: Employee Wellness  
 Phone Number: 252-847-1436  
 Email Address: susan.houston@[REDACTED]

Date: 10/24/2019

RE: Request to conduct quality for the following: "Strategies for Lifestyle Medicine Center Engagement for an Employee Population with Diabetes or Prediabetes"

Dear,

The [REDACTED] Center for Research and Grants [REDACTED] thank you for presenting your proposal to conduct quality at [REDACTED] Medical Center. This letter is to inform you that the [REDACTED] have completed an initial consult for your proposed quality project and have deemed your project feasible. If you have not done so already, the next step is to finalize your quality proposal and move onto the IRB for approval.

Administrative signatures will be needed from your Manager and/or Administrator, and Vice President.

At the completion of your quality project you may be asked to present outcomes at one or more [REDACTED] staff or leadership meetings. If the study takes you longer than one calendar year from the date of this letter, you must provide a report of your progress to the [REDACTED] CRG Department for submission to the IRB.

The [REDACTED] Department wishes you well as you progress on your quality project. If you have any questions or concerns, please contact the [REDACTED] Department at [research@\[REDACTED\].com](mailto:research@[REDACTED].com). We are here to support you from idea generation to dissemination.

The study cannot be initiated until you receive a final approval letter from the IRB.

Sincerely,

[REDACTED SIGNATURE]

\_\_\_\_\_  
 IBCLC 12/3/19

S [REDACTED] and Grants  
 P [REDACTED]  
 E [REDACTED] m

[REDACTED SIGNATURE] 20/17

\_\_\_\_\_  
 cer

Appendix K

Demographic Data Tracking Tool

**Strategies for Lifestyle Medicine Center Engagement for an Employee Population  
with Prediabetes or Diabetes**

<b>Employee</b>	<b>Age</b>	<b>Sex</b>	<b>Education</b>	<b>Income</b>		
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
13						
14						
15						

Appendix L

Prediabetes Risk Test

# Prediabetes Risk Test



**1. How old are you?** Write your score in the boxes below

Younger than 40 years (0 points)   
 40–49 years (1 point)   
 50–59 years (2 points)   
 60 years or older (3 points)

**2. Are you a man or a woman?**

Man (1 point)  Woman (0 points)

**3. If you are a woman, have you ever been diagnosed with gestational diabetes?**

Yes (1 point)  No (0 points)

**4. Do you have a mother, father, sister, or brother with diabetes?**

Yes (1 point)  No (0 points)

**5. Have you ever been diagnosed with high blood pressure?**

Yes (1 point)  No (0 points)

**6. Are you physically active?**

Yes (0 points)  No (1 point)

**7. What is your weight category?**

(See chart at right)

**Total score:**

Height	Weight (lbs.)		
4'10"	119-142	143-190	191+
4'11"	124-147	148-197	198+
5'0"	128-152	153-203	204+
5'1"	132-157	158-210	211+
5'2"	136-163	164-217	218+
5'3"	141-168	169-224	225+
5'4"	145-173	174-231	232+
5'5"	150-179	180-239	240+
5'6"	155-185	186-246	247+
5'7"	159-190	191-254	255+
5'8"	164-196	197-261	262+
5'9"	169-202	203-269	270+
5'10"	174-208	209-277	278+
5'11"	179-214	215-285	286+
6'0"	184-220	221-293	294+
6'1"	189-226	227-301	302+
6'2"	194-232	233-310	311+
6'3"	200-239	240-318	319+
6'4"	205-245	246-327	328+
	<b>1 Point</b>	<b>2 Points</b>	<b>3 Points</b>

You weigh less than the 1 Point column (0 points)

Adapted from Bang et al., Ann Intern Med 151:775-783, 2009. Original algorithm was validated without gestational diabetes as part of the model.

**If you scored 5 or higher**

You are at increased risk for having prediabetes and are at high risk for type 2 diabetes. However, only your doctor can tell for sure if you have type 2 diabetes or prediabetes, a condition in which blood sugar levels are higher than normal but not high enough yet to be diagnosed as type 2 diabetes. **Talk to your doctor to see if additional testing is needed.**

*If you are African American, Hispanic/Latino American, American Indian/Alaska Native, Asian American, or Pacific Islander, you are at higher risk for prediabetes and type 2 diabetes. Also, if you are Asian American, you are at increased risk for type 2 diabetes at a lower weight (about 15 pounds lower than weights in the 1 Point column). Talk to your doctor to see if you should have your blood sugar tested.*

**You can reduce your risk for type 2 diabetes**

Find out how you can reverse prediabetes and prevent or delay type 2 diabetes through a **CDC-recognized lifestyle change program** at <https://www.cdc.gov/diabetes/prevention/lifestyle-program>.

Risk Test provided by the American Diabetes Association and the Centers for Disease Control and Prevention.

Appendix M

Wellness Navigator Daily Tracker

**Strategies for Lifestyle Medicine Center Engagement for an Employee Population with Diabetes or Prediabetes**

<b>Wellness Navigator Daily Tracker</b>						
<b>Date:</b>						
<b>Wellness Navigator:</b>						
<b>Calendly</b>	<b>WN</b>	<b>Diabetes</b>	<b>PDR Test</b>	<b>Referral</b>	<b>Referral</b>	<b>KYN</b>
<b>Appts</b>	<b>Appt</b>	<b>Yes or No</b>	<b>Score</b>	<b>Yes or No</b>	<b>To:</b>	<b>Score</b>
<b>Circle #</b>						
<b>Example</b>	<b>Yes</b>	<b>No</b>		<b>5 No</b>	<b>N</b>	<b>77</b>
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						

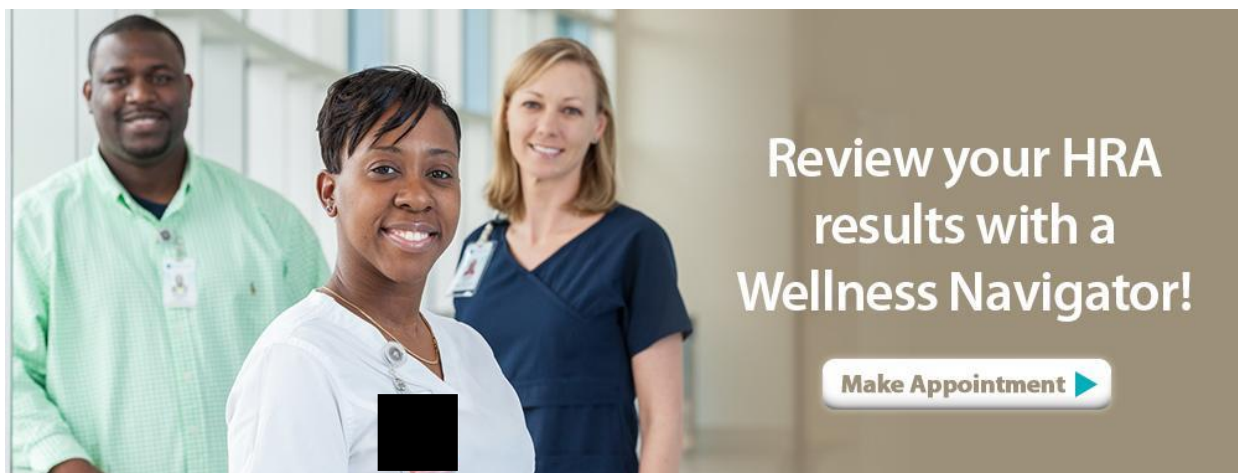
Appendix N

Weekly Wellness Navigator Encounters - Data Tracking Tool

<b>Strategies for Lifestyle Medicine Center Engagement for an Employee Population with Prediabetes or Diabetes</b>				
<b>WEEK</b>	<b>Wellness Navigator</b>	<b>Number of Employees Attempted</b>	<b>Numbers of Employees Reached</b>	<b>Number of Employees with Initial Appt</b>
Week 1				
Week 2				
Week 3				
Week 4				
Week 5				
Week 6				
Week 7				
Week 8				
Week 9				
Week 10				
Week 11				
Week 12				
Week 13				
Week 14				
Week 15				
Week 16				

## Appendix O

## Email Outreach for Employees with Prediabetes and Undiagnosed Diabetes



Dear [REDACTED] Team Member,

Thank you!

You were 1 of **10,805** team members who completed the Health Risk Assessment for fiscal year 2019. Schedule your 10-minute telephonic Well-being Consultation with our Wellness Navigator to:

- Review your Health Risk Assessment Results
- Learn about programs and services offered free of charge to team members, spouses and dependents
- Take charge of your health!

[Make Appointment By Clicking Here](#)

We look forward to working with you.

Your [REDACTED] Wellness Team

Appendix P

Example of Calendly™ Appointment Schedule

The screenshot shows a Calendly appointment page. On the left, there is a navigation arrow, a profile picture of a person, and the text 'Wellness Navigator Appointment' with a '10 min' duration. A description states: 'This appointment is a 10 minute phone call to discuss your health risk assessment score and wellness program options.' On the right, a calendar for 'January 2020' is displayed with days of the week (SUN to SAT) as column headers. The dates 29 and 30 are highlighted in blue circles. Below the calendar, the time zone is set to 'Eastern Time - US & Canada (3:48pm)'. A 'POWERED BY Calendly' logo is in the top right corner.

**Wellness Navigator Appointment**  
10 min

This appointment is a 10 minute phone call to discuss your health risk assessment score and wellness program options.

**Select a Date & Time**

January 2020

SUN	MON	TUE	WED	THU	FRI	SAT
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

Eastern Time - US & Canada (3:48pm)