Lifestyle Intervention Program for Prediabetic Patients

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DNPV 767: DNP Project III

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Abstract

This evidence-based practice project was designed to educate primary care providers on proper diagnosis of prediabetes, ensure compliance with national standards for treatment of prediabetes, and enroll prediabetic patients in National Diabetic Prevention Program. The project used IOWA Model of Evidenced Based Practice which helped emphasize the involvement of key stakeholders, including healthcare providers, administrators, and patients, in the decision-making process. Recent literature suggests that to make an impact in lifestyle modifications, diabetes prevention requires enhancing patient education, boosting primary care providers' knowledge, and utilizing efficient, evidence-based prediabetes education resources. The findings from the project showed that implementing a referral program led to more patient screening for prediabetes, education on lifestyle modifications and referral to national diabetic prevention program. The referrals did not lead to any enrollments in the National Diabetic Prevention Program within the five week period but it was still valuable to the primary care clinic due to the increased awareness on lifestyle modifications. Ongoing efforts are necessary to further improve these metrics and enhance the overall effectiveness of the program. Strategies such as continuing education for primary care providers, regular updates to educational materials based on latest evidence and incorporation of patient feedback can be implemented.

Keywords: prediabetes, lifestyle modification, National Diabetes Prevention Program (NDPP)

Lifestyle Intervention Program for Prediabetic Patients

The term “prediabetes” is used by the American Diabetes Association (ADA) and the American Association of Clinical Endocrinologists (AACE) to define a condition characterized by a slightly elevated blood glucose level, not high enough to be considered as diabetes but outside the normal range (Andari et al., 2021). Pre-Diabetes is major public health problem as it increases the risk for Type II diabetes and cardiovascular events. One-third of US adults have pre-diabetes and majority are unaware that they have prediabetes, in the 88 million US adults with pre-diabetes, approximately 11% will progress to type 2 diabetes annually without lifestyle interventions (Davis-Ajami, Lu, & Wu, 2021).

Prediabetes is diagnosed when the hemoglobin A1c lab result falls between 5.7%-6.4% or the fasting glucose is between 100 to 125 mg/dl. Hemoglobin A1c is an average of glucose level in a person’s body in the last 3 months. This is an accurate test than daily fasting blood glucose, and it gives clinicians a reliable parameter to discuss with the patient and introduce lifestyle interventions. Prediabetic patients can be placed on medications, or it can be controlled with lifestyle modifications. Pharmacological method is complicated as patients might experience unpleasant side effects of diabetic medications but one of the biggest challenges is that most patients are not even aware that they are prediabetic.

If untreated, 37% of the individuals with prediabetes may have diabetes as early as four to five years. Lifestyle intervention may decrease the percentage of prediabetic patients in whom diabetes develops to 20% (Tuso,2014). Something that is just as important and effective as the pharmacological methods to control prediabetes would be lifestyle modifications, as high blood sugar is primarily a metabolic disorder. The initial step to prevent diabetes is to make lifestyle

modifications when identified as a prediabetic. Interventions to control prediabetes would include regular exercise, weight control, maintaining a Body Mass Index (BMI) of 20-25, strict low carbohydrate diet (Davis-Ajami, Lu, & Wu, 2021).

Project Identification

This project is developed with primary care clinic in mind, situated in an urban area. The problem at this primary care site is that there are no resources or interventions for prediabetic patients. The patients are not given serious conversation time on how deadly this disease can be, and they are not given any tools to effectively focus on lifestyle modifications. This leads to a progression of prediabetes to diabetes and the patients receive their first counseling and extensive education for lifestyle modification when they are officially diagnosed with diabetes. Diabetes can lead to microvascular and macrovascular complications including neuropathy, nephropathy, retinopathy, and an increased risk for a cardiovascular event such as stroke or heart attack.

The Center for Disease Control (CDC) has implemented a lifestyle change program for prediabetic patients called National Diabetes Prevention Program (National DPP) focused on a lifestyle modification plan which reduces the risk of prediabetic patients becoming a diabetic by 58% (National Diabetes Prevention Program, 2023). For people over the age of 60, this lifestyle modification program cuts the risk of diabetes by 70%. The objective of CDC's National DPP is to prevent, prolong and delay the progression of prediabetes into diabetes as diabetes is a public health problem.

The patients who enroll in this National DPP has the privilege of learning about diet, nutrition, physical activity, stress reduction, coping skills and it is an individualized program. This program is one year long as it takes time to learn new lifestyle. This program allows prediabetic

program gives patients the opportunities to identify personal barriers that is preventing them from being in their best health and assist them in making long lasting changes.

The first step is taken by the health care providers by diagnosing a patient as a prediabetic and once they have the official diagnosis the providers can place a referral to the National Diabetes Prevention Program. Prediabetic patients have the convenience to enroll in this program from any zip code and the program is made available in every neighborhood and the classes are also offered in an online learning format (National Diabetes Prevention Program, 2023).

The problem of lack of teaching and interventions for prediabetic patients has been ongoing for several years. Recent healthcare policies directed by insurance companies focus on value-based care and patient centered care which makes lifestyle interventions important. This is a covered service under Medicare called Medicare Diabetic Prevention Program (MDPP) (National Diabetes Prevention Program, 2023).

Problem Statement

There is a gap in our knowledge about the associations between the evidence-based practice guideline supporting lifestyle change, physician utilization of that the guideline to provide advice during office visits and subsequent change in patient behavior (Davis-Ajami, Lu, & Wu, 2021). The clinic is lacking a standardized approach to meet American Diabetic Association (ADA) guidelines for adapting food choices and increasing physical activity (American Diabetes Association; North American Association for the Study of Obesity; American Society for Clinical Nutrition; Klein et al., 2004). National DPP is a program that prediabetic patients can be encouraged to enroll in, by the primary care providers. (National Diabetes Prevention Program, 2023). The prediabetic patients need to be educated and empowered to take

charge of their health based on evidenced based research. Assisting them in making informed decisions about their lifestyle can lead to lifechanging outcomes. The proposed resolution to this problem is to educate prediabetic patients about this program offered by CDC focused on lifestyle modification and encourage them to enroll. (National Diabetes Prevention Program, 2023).

Project Question

In adults with prediabetes (P), does enrolling in the National Diabetes Prevention Program by the CDC (I) compared to not participating in the program (C) increase prediabetic education over the course of 5 weeks.

Search Methods

The Iowa Model of Evidence Based Practice (EBP) was used to guide the search methods. Iowa model consists of asking the PICOT question, acquiring the evidence, appraising the evidence, and applying the evidence. Guided by the PICOT question, on how enrolling prediabetic patients in the National DPP increases prediabetic education, the search terms used were “Prediabetes” and “Lifestyle modifications”. More than 25 articles were available for review. The search was conducted by accessing Jay Sexter Library link online from Touro University login page. The search database used were Pubmed, Medline, EBSCOhost CINAHL Plus, JAMA network, Cochrane library, and New England Journal of Medicine. The criteria of inclusion were articles within the last 5 years, scholarly- peer-reviewed and articles with full text.

Inclusion criteria

Only studies which were relevant to the PICOT question were selected. The year of publication was limited to the last 5 years due to needing relevance. Primary research methods involving quantitative, qualitative, or mixed methods were selected. Studies published in peer-reviewed journals were prioritized.

Exclusion criteria

If the study was irrelevant to PICOT question, it was eliminated. Dissertations, opinions, and commentary articles were excluded due to possible lack of data.

Review of Study Methods

The review of study methods primarily revealed Cross sectional studies, randomized control trial, systematic review and meta-analysis across the articles. The Prediabetes Diagnosis and Management article by William H Herman, did a randomized clinical trial which compared the effects of treatment group with a control group receiving a placebo and standard care. The study showed that patients receiving standard care among participants randomized to the lifestyle intervention, the 3-year risk of developing diabetes was reduced by 40 percentage points (59% in the control group vs 19% in the lifestyle intervention group) among those at highest risk compared with 8 percentage points (12% in the control group vs 4% in the lifestyle intervention group) among those at lowest risk of developing diabetes (Herman, 2023). In the question of why care about lifestyle modifications in prediabetic patients, when encouraged strict lifestyle modifications consisting of ≥ 180 min of physical activity per week and a calorie intake of 1,200 to 1,800 kcal per day helps reduce cardiovascular complications.

Review Synthesis

Lifestyle interventions in pre diabetic patients resulted in preventing patients from becoming diabetics. It led to weight loss, better dietary choices, stress management and overall better health. There are 80 million Americans with prediabetes who are at risk of developing diabetes. Among participants randomized to the lifestyle intervention, the 3-year risk of developing diabetes was reduced by 40 percentage points (59% in the control group vs 19% in the

lifestyle intervention group) among those at highest risk compared with 8 percentage points (12% in the control group vs 4% in the lifestyle intervention group) among those at lowest risk of developing diabetes (Herman, 2023).

It is important to monitor, educate, support, advocate and involve multiple disciplines to assist prediabetic patients. The key players are healthcare providers, pharmacists, World Health Organization (WHO), American Diabetic Association (ADA), Centers for disease control and prevention (CDC), insurance companies, health departments, employer, Food and drug administration (FDA)

Theme Development

The major theme identified in the studies are incidence and prevalence of prediabetes, prevention methods for diabetes.

Prevalence of prediabetes

One in five adolescents are now living with prediabetes as reported by Centers for Disease Control and Prevention (CDC) (1 in 5 Adolescents Now Living with Prediabetes, 2020). The prevalence of prediabetes in adolescents and young adults reinforces the critical need for effective public health strategies that promote healthy eating habits, physical activity, and stress management, says CDC Director Robert R. Redfield, M (1 in 5 Adolescents Now Living with Prediabetes, 2020). The prevalence of prediabetes is seen in younger ages, and it is high time that interventions focusing prediabetes be implemented, and this is a public health crisis.

Prevention methods to prevent progressing to diabetes.

There are numerous ways to prevent prediabetes from progressing to diabetes. Lifestyle modification with exercise is the most recommended intervention and considered to be the first line of treatment. To bring more awareness on prediabetes and to place the focus on

lifestyle modifications, National DPP was created in 2010 by CDC. This national effort created partnerships between public and private organizations to offer evidence-based, cost-effective interventions that help prevent type 2 diabetes in communities across the United States (National Diabetes Prevention Program, 2023).

This CDC recognized lifestyle modification program has three major components and they include following a curriculum for a year, meeting up with the life coach and doing activities with the support group (National Diabetes Prevention Program, 2023). Support group includes connecting with other people with prediabetes. The program is one year long and requires meeting once weekly during the first six months and once or twice monthly during the second half of the program. These three factors together will equip the prediabetic patients with tools to make changes that lasts a lifetime. The community events are designed to be fun and incorporates exercise without having to carve out extra time for exercise. The highlight of this program is that it is individualized and culturally sensitive, the dietitians and life coaches educate patients on how to prepare the food they are culturally accustomed to, in a healthy way.

Following the program curriculum

National DPP curriculum includes lessons and handouts. There are 16 topics covered in the first six months of the program and 14 topics in the second half of the program. The meetings take place in the Dignity Health Women's Care and Community Outreach Center located in Henderson, NV. The topics discussed on lifestyle modification primarily are on understanding the disease, healthy eating, and regular exercise. The landmark Diabetes Prevention Program (DPP) Trial demonstrated a 58% reduction in 3-year diabetes incidence with an intensive lifestyle intervention in high-risk persons with prediabetes (Lee et al.,2019). 58% is significant enough to take lifestyle modifications into consideration. The main idea is to make patients aware is that if

the lifestyle is not modified, the progression of the disease will be unavoidable.

Meeting up with life coach

The patients will be assigned a life coach when enrolled in National DPP who will teach the skills to lose weight, be more physically active and manage stress. They also teach time management skills so that exercise can be incorporated into daily living. Life coach will lead discussions and introduce topics which are known to be fun and engaging.

Community programs for diabetics

Getting involved in society led diabetic programs and attending nutritional classes offered by healthcare clinics, worksites or healthcare wellness centers will be a good place for patient to get more acquainted with this metabolic disorder and meet other people going through the same process (National Diabetes Prevention Program, 2023).

As part of National DPP the enrolled patients are placed in a support group, which consists of people with similar goals. Together the community group encourages one another, share tips and tricks, celebrate success, and offer support when feeling discouraged. They educate each other on how to monitor blood glucose and get labs done.

Regular primary care provider visits for monitoring of HemoglobinA1c is essential to understand how the disease if progressing. The United States Preventive Services Task Force (USPSTF) recommends screening for abnormal blood glucose as part of cardiovascular risk assessment in adults aged 40–70 years who are overweight or obese (Andari et al., 2021). The ADA, in a recent statement, stated that prediabetes is linked to obesity (abdominal or visceral), dyslipidemia, high triglycerides and/or low high-density lipoprotein (HDL)-cholesterol, and hypertension (Andari et al., 2021). Enrolling in National DPP provides prediabetic patients individualized physical activity programs.

Title: Project Rationale

The rationale of the project is to identify prediabetic patients, educate and encourage clinicians to refer those patients to the National DPP program and thus preventing the progression of prediabetes into diabetes.

Aims of the Project

There is a gap in the management of patients with prediabetes which results in a missed opportunity to assist patients with early interventions. The aim is to align with the goal of primary care clinics to focus on preventative care. Attempting to narrow the gap between prediabetes identification and enrollment in the National DPP, the project aims to make a substantial impact on preventing the progression to type 2 diabetes and ultimately improving the overall health and well-being of individuals at risk.

Objective

In the timeframe of the DNP project, the following objectives will be met:

Enroll prediabetic patients in the National DPP program.

The landmark Diabetes Prevention Program (DPP) Trial demonstrated a 58% reduction in 3-year diabetes incidence with an intensive lifestyle intervention in high-risk persons with prediabetes (Lee et al., 2019). The clinicians will be educated to identify patients with a hemoglobin A1c greater than 5.7% and to start the discussion with the patient on enrolling into the National DPP program. If the provider is invested and informed on this program and encourages the patient, the patients are more likely to consider enrolling in the program. The initial conversation will be started with these patients by the primary care provider and the prediabetes risk test will be completed during the appointment. The medical assistant will assist

the patient to enroll and will contact the National DPP local coordinator. Periodic visits with primary care provider will be scheduled every four weeks to ensure patient stays motivated and is following the program.

Educate providers on National DPP program.

Pilot change by running in the database on how many patients have prediabetes and which provider they are assigned to. A list of current patients with prediabetes can be presented to the provider and the designated medical assistant for easy reference. Educating providers to identify early signs and symptoms that contribute to the development of prediabetes and diabetes is an important objective of this DNP project. In a study from the Nationwide Diabetes Report of the National Program for Prevention and Control of Diabetes, it was concluded that obesity was independently associated with cardiovascular disease, neuropathy, and nephropathy in patients with type one diabetes and type two diabetes (Moosaie et al., 2022). This signifies the importance of different preventive and therapeutic approaches to obesity in diabetes and prediabetes on a national and global scale.

Increase rates of enrollment of patients in National DPP program by 20%.

By obtaining the number of patients with prediabetes, equipping providers with tools to educate the patient, and by collaborating with the community outreach center, the goal is to increase enrollment of patients in National DPP program by 20%. When a patient is diagnosed as a prediabetic, after educating them and doing a prediabetes risk test, a referral can be placed in the electronic medical record to community-based dietitian and the name of the Lifestyle coach and Registered Dietitian will be placed in the referral. The patient labs and prediabetes risk test will be attached to the referral. It will be faxed and processed by the medical assistant and the lifestyle coach will call the patients after they receive the referral.

Increase appropriate diagnosis and treatment of pre-diabetes in the clinic by 50%.

With a targeted approach, including regular screening of hemoglobin A1c, provider education, and patient engagement strategies, the clinic aims for an improvement ranging from 50 to 60% in the appropriate diagnosis and treatment of prediabetes.

Improve Provider Compliance with National Standards

The field of behavioral economics has demonstrated that subtle changes in the design of health information and treatment choices can have substantial short-term impacts on health behaviors (Vargas et al., 2023). Providers tend to forget all the resources available due to the variety of information they are presented daily in various forms. An educational handout from CDC can be given to all providers for easy reference.

Incentives for Educating and Enrolling

Self-determination theory has empirically demonstrated that long-term maintenance of health behaviors requires autonomous motivation (Vargas et al., 2023). This applies to both providers and patients. The information on National DPP will be presented in a provider monthly meeting setting. Prediabetic patient identification criteria of Hemoglobin A1c between 5.7% - 6.4 % will be reinforced, providers will be encouraged to have the talk with the patient on National DPP program offered by Dignity Health Outreach center locally. The providers will be shown how to complete the prediabetes risk test with the patient. The incentive will be the fulfillment and self-satisfaction knowing that they offered quality healthcare and kept their patients healthy. Keeping the patients healthy and out of the hospital also is a metric calculated towards their bonuses.

Incentives for Patients

The motivation for patients would be the opportunity to meet with a health coach, interact with other people who have prediabetes, learn the tools to eat healthy and exercise, better nutritional

education. The monthly meetings and community setting will give them a sense of belonging and self accountability and the length of the program being one year gives them ample time to adjust to the new lifestyle methods they are learning.

Implementation Framework

The implementation framework selected for this project is the IOWA Model. Developed by Marita Tilter in the late 1990s, the IOWA Model of Evidence-Based Practice to Promote Quality Care provides a systematic approach to guide the implementation of evidence-based practices in healthcare settings (Lee et al., 2019). The IOWA model steps include identifying the clinical problem, searching for evidenced based research articles, critically appraising the articles, integrating the evidence with clinical expertise, implementing the change, and evaluating the change. The IOWA model explains how organizations change practice based on research.

Clinical Question

The question with the framework of IOWA model is how to increase patient enrollment in National Diabetic Prevention Plan. The triggering issue is the increasing prevalence of prediabetes and its progression to diabetes warrants the need for proactive intervention. About one in three patients have prediabetes on average, and assisting them in enrolling in an evidenced based program approved by CDC is a safe and ideal method to treat the patients.

Research Studies

Research focuses on lifestyle modifications to prevent progression of pre-diabetes to diabetes. By applying the Iowa Model, this project aims to systematically address the problem of low enrollment in the National DPP and implement evidence-based interventions to increase participation, ultimately reducing the risk of progression from prediabetes to diabetes in the target population. IOWA model provides a structured process for critically appraising existing evidence

related to prediabetes management and enrollment in the National Diabetes Prevention Program (National DPP). This step is crucial for ensuring that the chosen intervention is grounded in sound research and aligns with best practices.

Team Members

The team is comprised of primary care providers, and medical assistants. IOWA model is focused on research evidence, clinical expertise, and patient preferences to be considered in decision-making and practice changes. IOWA Model was created with the idea to assist in closing the gap between evidenced based research findings and the difficulty of applying it into clinical practice. The landmark Diabetes Prevention Program (DPP) Trial demonstrated a 58% reduction in 3-year diabetes incidence with an intensive lifestyle intervention in high-risk persons with prediabetes (Lee et al., 2019).

Evaluation of Change

IOWA Model emphasizes the involvement of key stakeholders, including healthcare providers, administrators, and patients, in the decision-making process. This collaborative approach is vital for gaining buy-in, addressing potential barriers, and tailoring the intervention to the specific needs and context of the healthcare setting. Furthermore, the IOWA Model promotes ongoing evaluation and feedback, allowing for continuous improvement and refinement of the intervention over time.

Population of Interest

The population of interest in this project is adults diagnosed with prediabetes in an urban primary care clinic. Prediabetes is defined by a fasting glucose level of 100 to 125 mg/dL, a glucose level of 140 to 199 mg/dL measured 2 hours after a 75-g oral glucose load, or glycated hemoglobin level (HbA1C) of 5.7% to 6.4% (Echouffo-Tcheugui, Perreault, Ji, Dagogo-Jack,

2023). The prediabetes lab result should be within the last 12 months. Of persons with diabetes, 21.4% were not aware of or did not report having diabetes, and only 15.3% of persons with prediabetes reported being told by a health professional that they had this condition (US Preventive Services Task Force, 2021).

Direct population

The direct population include providers and their medical assistants that will be trained on how to implement the referral. The providers working in the clinics will be trained to educate patient about National DPPP and give them the information on how to enroll in this lifestyle modification program. Their education must be solidified so that they can answer questions on the National DPP. Their focus will be on what prediabetes is, how it will lead to diabetes without lifestyle modifications, the inclusion and exclusion criteria, the benefits of enrolling in National Diabetes Prevention Program and the steps on how to enroll in the program.

Indirect population

The indirect population will be the patients with prediabetes who will be directly impacted by the project. The current recommendation statement, the USPSTF recommends screening for prediabetes and type 2 diabetes in adults aged 35 to 70 years who have overweight or obesity, and that clinicians should offer or refer patients with prediabetes to effective preventive interventions (US Preventive Services Task Force, 2021). Due to increase in childhood obesity and juvenile diabetes any adult over the age of 18 with BMI>30 or a chronic disease are being screened at this clinic with hemoglobin A1c at least once yearly.

Inclusion and Exclusion Criteria

Inclusion Criteria

As per the CDC website inclusion criteria, patients need to be 18 years of age or older,

BMI >25, not currently pregnant, not currently diagnosed with Type 1 or Type II diabetes and diagnosed with prediabetes (National Diabetes Prevention Program, 2023). Patients who had gestational diabetes can also be included in this criterion. The inclusion criteria for the patients in this project includes 18 to 85 years of age, diagnosis of prediabetes as evidenced by a lab result in the last 12 months, primary language of English or Spanish, living in the Las Vegas and Henderson area.

Inclusion criteria for the practice location as per CDC's website requires the clinic to have the ability to refer patient to this project through the referral process (National Diabetes Prevention Program, 2023). During the check-out process patient will be educated on how to enroll in this project by the medical assistant. A handout will be given with the information on how to register for this program and the patient will be notified that the lifestyle coach will contact them.

Exclusion Criteria

As per the CDC guideline the patients who are pregnant, under the age of 18, already a type 1 or type 11 diabetic, who does not fall in the body mass index of being overweight or obese will need to be excluded. (National Diabetes Prevention Program, 2023). Patients who have a terminal illness and is on dialysis will be excluded as their conditions are primarily managed by specialists. The racial, socioeconomic, gender, and marital status will not be a factor of exclusion.

Project Setting

Location

Eight urban primary care clinics located in and around Las Vegas, NV. The National DPP is offered at the community outreach center in Henderson NV.

Practice Details

Each clinic operates under a primary care model with two or more primary care providers including doctors, nurse practitioners and physician assistants. Operational five days a week, 8am to 5pm, one clinic is open on weekends. Minor office procedures including pap smear, joint injections, incision and drainage, toenail removal, breathing treatments, hypertension management etc. are done regularly. Each provider is paired with a medical assistant. Approximately twenty patients are seen per provider per day. Research shows that the interventions for prediabetic patients are largely dependent on the provider. Fewer than 1 in 10 patients with prediabetes seen in primary care received evidence-based treatment within 1 year of diagnosis (Speaker et al., 2021). Hence it is important that this project is implemented in primary care clinics.

Organizational Context

The clinics operates on an insurance-based model. Majority of insurances including Medicaid and Medicare are accepted. Cash pay options are also available for patients without health insurance. All providers report to the Medical Director.

Stakeholders

Without the association and approval of the powerful people in the organization it would not be possible to implement this project in the clinic. The three main stakeholders of this clinic are the CEO, Medical director, and vice president of operations. The three stakeholders work together and is situated in the corporate office. The providers can contact them via email, phone call or in person. They are generally supportive, encouraging, and open to new ideas.

CEO is financially invested and focused on increasing revenue from clinics. She is keen on patient satisfaction and patient retention. An affiliation agreement was required between the clinic and the university, and she approved the affiliation agreement between the clinic and Touro

university. She entrusts all clinical matters to be handled by the medical director.

Medical director is interested in all the details of the project. He does not have any financial interest and he is open to implementing this project in the clinic. He guides his providers to practice evidenced based practice. The vice president of operations is the third pillar of the organization, but she does not interfere in clinical affairs and her interest is also in increasing revenue from the clinics.

Interventions

First objective

There are four objectives with this project and the first objective is to educate the providers on this program and enroll prediabetic patients in the National DPP program. The intervention to achieve this goal is to identify prediabetic patients by reviewing their HgA1c lab test and to discuss the importance of lifestyle modifications in preventing prediabetes from progressing to diabetes. The patients are usually scheduled a follow up appointment for reviewing the lab results in a fifteen-minute slot. To join the National DPP's lifestyle change program patients should meet four requirements from the first criteria and once of the requirements from the second criteria. First criteria are that patient should be eighteen years and older, not currently pregnant, not diagnosed with type 1 or type 2 diabetes and overweight or having a body mass index >25. Second criteria require the patient to have a blood test proving prediabetes or must have a history of gestational diabetes or high risk result on prediabetes risk test. During this appointment, the provider will introduce National DPP program and educate the patients on how this evidenced based program will assist them in controlling their prediabetes. This program is offered locally by Dignity Health WomensCare and Community Outreach Center. A referral will be placed to the community-based dietitian and the dietitian will contact the patient once they

receive the referral.

If the patients' feel that their providers are invested in their health and believes in this evidenced based program the patients will be interested as well. To educate the providers, a handout from the CDC website on the explanation of criteria will be given during a small educational talk on National DPP during the provider meeting on February 13th ,2024.

Appendix A: Program eligibility

Second Objective

The second objective is to increase rates of enrollment of patients in National DPP program by 20%. Currently, there are twenty-two providers in this primary care group, and they will be educated and encouraged to enroll their prediabetic patients in the National DPP. The dietitian and lifestyle coach who is leading this program is willing to provide data on how many patients enrolled from referrals received from this medical group. The community outreach center is equally interested in assisting with enrolling the patients and they are accessible via phone calls and emails. Provider will identify patients based on the program eligibility criteria, complete the prediabetes risk test during their appointment which will only take no more than 2 minutes. place the referral and follow up with patients on a regular basis.

Appendix B: Prediabetes Risk Test

Third Objective

The third objective of this project is to increase appropriate diagnosis and treatment of pre-diabetes in the clinic by 50%. The testing for prediabetes can be done few different ways in a non-pregnant patient. The common ways the prediabetes is tested in this clinic is using the Hemoglobin A1c measurement of 5.7% to 6.4%, or a fasting glucose between 100-125 mg/dl. The providers will be encouraged to order the hemoglobin A1c lab as the dietitian and lifestyle coach

prefers this lab result on patients referred to them. Benefits of using HbA1c as a diagnostic tool include its consistent repeatability and stability before analysis. Additionally, HbA1c levels can be assessed after meals and exhibit minimal variations throughout the day (Perez et al., 2022). Medical assistants will be provided with a tool known as the hemoglobin A1c thermometer, which is to be stationed in the examination rooms on all the clinics. This instrument will aid providers in enhancing their educational efforts regarding prediabetes.

Appendix C: Hemoglobin A1c thermometer

Fourth objective

The final objective of this paper is to Improve Provider Compliance with National Standards. The treatment or interventions for prediabetes is currently up to the provider discretion. Some providers choose not to address the prediabetes or to just casually mention that the patient is in prediabetic range. When providers highlight the progression from prediabetes to diabetes, the prevention strategies, and the implementation of the National Diabetes Prevention Program (DPP) to facilitate lifestyle changes, it can spark patients' interest in their own health management. A nationwide poll revealed that over 70% of healthcare providers concur that enhanced education for providers could significantly decrease the rates of diabetes and prediabetes. Despite this, numerous primary care providers set inaccurate targets for weight loss, overlook the guidelines for screening and managing prediabetes, and often confuse diabetes with prediabetes in diagnoses (McConnell II et al., 2023). To improve provider compliance with national standards, a handout from the local outreach team will be provided to the providers which is easy to refer to and has all the necessary details.

Appendix D: National Diabetes Prevention Program handout

Project Team

Project team will be located at the Eastern location of Valley Oaks Primary Care clinic in Las Vegas consisting of a nurse practitioner and medical assistant. A relationship has been established with the diabetic prevention program coordinators and they are looking forward to partnering with this primary care group and getting the word out on this valuable evidenced based project in the community. The project team leader will be conducting an education for all the providers during the February 2024 monthly provider meeting. The project team will manage and review the data pertaining to patient referrals made to the National Diabetes Prevention Program (DPP) by individual providers. Additionally, the team will gather enrollment figures by liaising with the National DPP coordinators at the outreach center.

Resources

Many tools are available on the CDC website regarding National DPP for the providers, for the practices, life coaches and patients. The curriculum for this program and educational tools for making lifestyle changes are readily available for downloading and printing.

The Dignity Health WomensCare and Community Outreach Center has provided a quick Prediabetes Risk Test for the patients to take, and the handout with details on dates of upcoming classes. No further permission or license is required since it is used for nonprofit research and nonprofit educational activities.

Time line

Permission has been obtained from medical director to educate all the providers and encourage them to refer prediabetic patients to enroll in this outreach program. Medical director has allowed to place the referral to the outreach center community-based dietitian. The timeframe for this project is 5 weeks. The project lead will manage the process to comply with the given

timeframe. Implementing the project starts with educating the providers on National DPP which will be done on February 13th, 2024 during the provider meeting. The education piece includes educating the providers by giving the National DPP handout, hemoglobin A1c thermometer, prediabetes risk test, and program eligibility handout. Implementing the program will be done in week one of project. Week 2 – week 5 will be utilized for data collection and analysis.

Table 1

Timeline for project

Week I February 28 – March 5th	Implementation: • Ensure adequate copies of all handouts are available in all eight clinics. • Send out an email on February 28th to all providers reminding them that this project starts on February28th, 2024. • Remind the providers that project lead is available to answer any questions via Teams anytime.
Week 2 March 6th – March 12th	Data collection and analysis Run chart audit in eClinicalWorks, Electronic Medical Record to see how many providers gave patients the education and how many referrals were placed. Contact Sherry Poinier, Registered Dietitian and Lifestyle coach, for National DPP at Dignity Community Outreach Center, and collect data on how many patients were contacted and how many enrolled.
Week 3 March 13th to March 19th	Repeat Data collection and analysis
Week 4 March 20th to March 26th	Repeat Data collection and analysis
Week 5 March 27th to April 2nd.	Repeat Data collection and analysis

Tools

The National DPP project involves the use of existing evidenced-based tools from CDC website, tools provided by local outreach team and tool for data collection which will be developed by the project lead.

National Diabetes Prevention Program at Dignity Health WomensCare & Community Outreach Center (Appendix D)

This tool was sent directly by Sherry Poinier, Registered Dietitian, Certified Diabetes Educator at the Community Outreach Center. This tool explains prediabetes, risks of not treating it and information on CDC approved twelve-month program given in sixteen weekly sessions followed by monthly maintenance sessions. This handout will be given to all providers as an easy reference tool and additional copies will be made and kept in all clinics to give the prediabetes patients.

Prediabetes Risk Test (Appendix B)

This also came from Sherry Poinier, Registered Dietitian, Certified Diabetic Educator, which is a tool that all patients referred to National DPP needs to take. It is a questionnaire of seven questions and if the score is 5 or above, the patient is at increased risk for having prediabetes and are at high risk for type 2 diabetes. This tool will be done by the provider and the patient during their appointment.

Program Eligibility (Appendix A)

Program eligibility needs to be determined by the provider prior to referring patients to join the National DPP's lifestyle change program. This tool came from CDC website and is an easy tool to refer, to determine eligibility. Patients should meet four requirements from the first criteria and once of the requirements from the second criteria. First criteria is that patient should

be eighteen years and older, not currently pregnant, not diagnosed with type 1 or type 2 diabetes and overweight or having a body mass index >25. Second criteria require the patient to have a blood test showing prediabetes or must have a history of gestational diabetes or high risk result on prediabetes risk test.

Hemoglobin A1c Thermometer (Appendix C)

Hemoglobin A1c thermometer explains the lab value and given patient a simple explanation how to analyze the lab value. This tool is already in use at the Henderson clinic and a quick glance at this laminated picture in exam room in all the other seven clinics gives the provider another tool to explain prediabetes.

Analysis of Results

Data was collected from electronic health record (EMR) eClinicalWorks, by doing chart audits. During the five weeks of this project, the dietitian's office reported that there was a total of sixteen patients referred to the dietitian from Valley Oaks Medical Group for the diagnosis code of prediabetes. There were no modifications to the original time frame.

Chart Audit

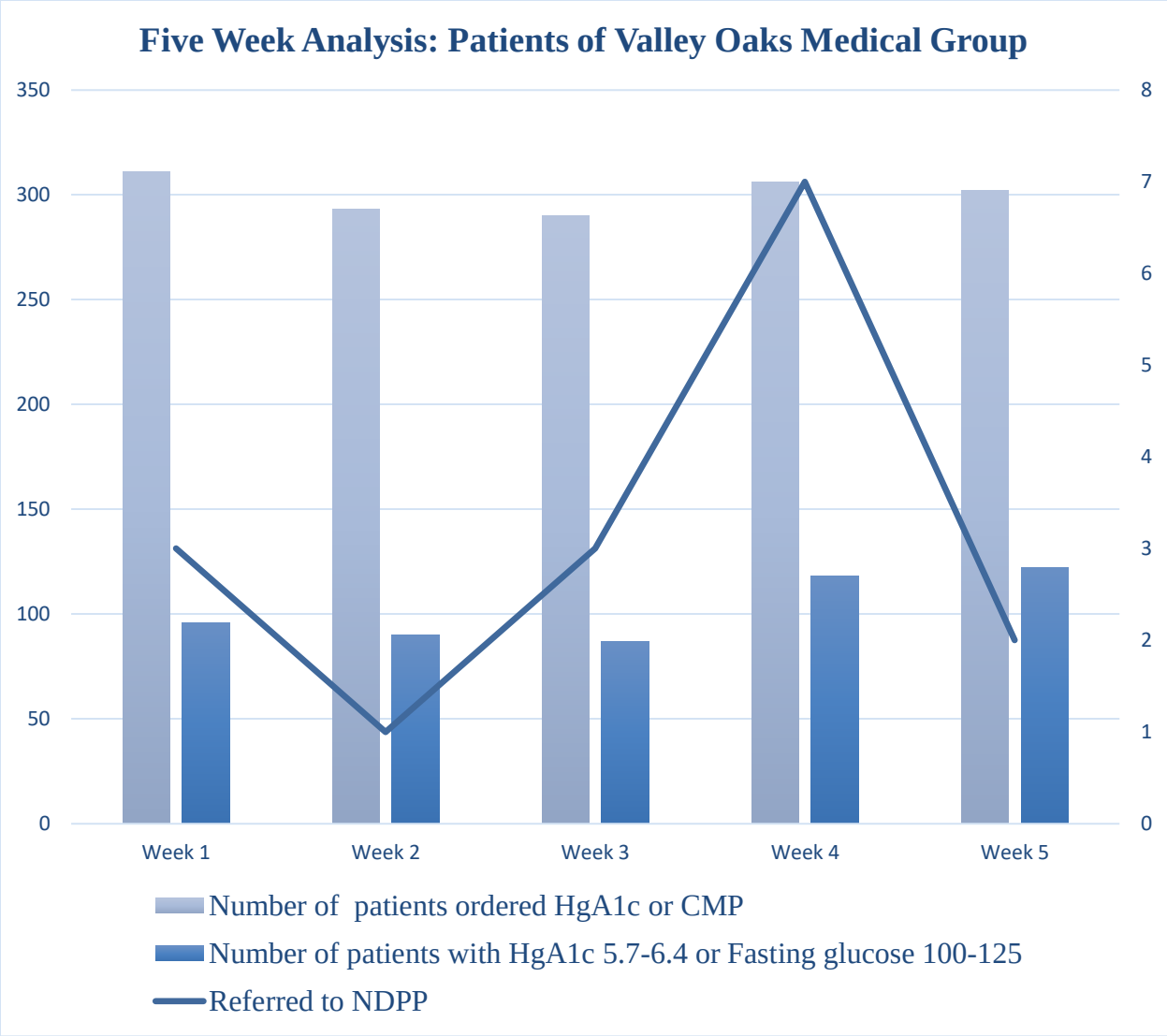
A total of 18 providers from Valley Oaks Medical Group were educated on NDPP and were part of the measurement group during this period from 2/28/2024 to 4/2/2024 for a total of 5 weeks. During the 5 weeks the providers had a total of 1,502 patients for whom a HgA1c or Comprehensive Metabolic Panel (CMP) was ordered during annual physical or part of a new patient visit. Out of the 1,502 patients, 513 patients had HgA1c between 5.7 – 6.4 or fasting glucose between 100 – 126 which identifies them as prediabetic. From the 513 patients identified as prediabetic a total of 16 patients were referred to the dietician for education and enrollment to NDPP. As of today, the enrollment rate into NDPP stands at zero, and there are continuous

outreach efforts being executed by the dietician.

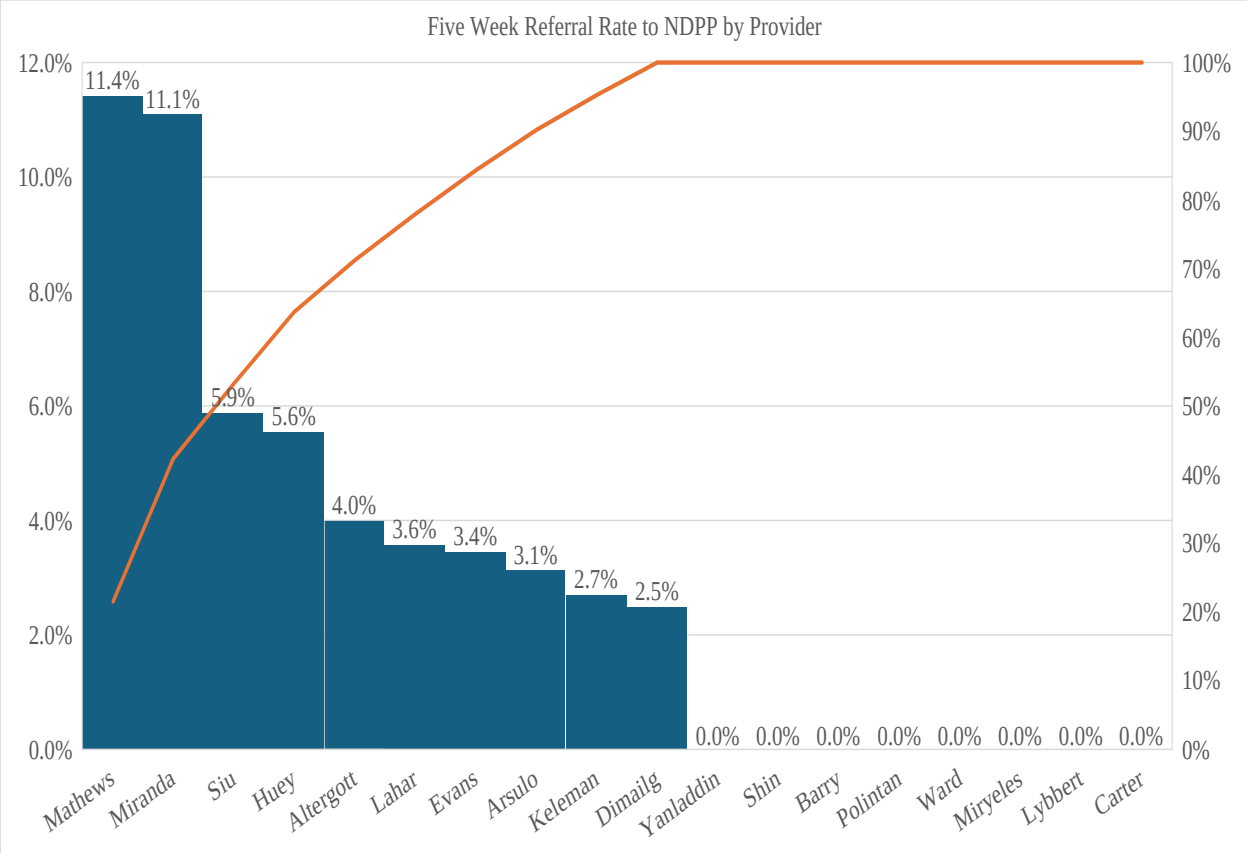
Summary of findings

Data collected daily and weekly within the electronic health records system eClinicalWorks at valley oaks medical groups shows the trend of patients being appropriately diagnosed with prediabetes. The data also shows how many of the identified patients are being referred to the dietician. Within Valley Oaks Medical group, the mean of patients for whom a HgA1c test was ordered was 16.7, and the median for this cohort was 17.0. The mean of patents diagnosed as prediabetic within the medical practice is 5.7, and the corresponding median is 5.0. Looking at the five weeks mean on patients referred to NDPP was 0.2, and the median during this time was 0. The chart below shows a positive trend in overall identification and referral to the NDPP program.

The data shows that all new patients and established patients returning for their annual physicals receive an HbA1c or CMP lab test with their yearly laboratory work. Providers are diligent in assigning the correct medical codes for individuals diagnosed as diabetic or prediabetic during their follow-up visits. This practice indicates that the provider education at the site aligns with national benchmarks.



Data analysis total HgA1c tests ordered by the provider, the number of patients within the pre-diabetic range of (5.7% to 6.4%), and subsequent referral to NDPP shows varying adherence and adoption rates by providers. Of the 18 providers within Valley Oaks Medical Group, the range of referral rates to NDPP ranges from 0.0% to 11.4%. The referral to NDPP rate for the whole practice was 3.1%.



Strengths and weakness of project

The summary of the project shows that ten out of eighteen, which is more than half of the providers placed at least one referral in the 5-week period to NDPP. The data shows that continuous educational efforts should be maintained to ensure consistent participation in the program, as there is a noticeable drop in referrals during week 5 following a rise in week 4.

Providers occasionally overlook this tool, and periodic retraining could enhance patient instruction regarding the NDPP. Additionally, a trend has been noted where there seems to be a reluctance to promptly enroll members who have been directed to the dietitian, with initial remarks from the dietitian suggesting a hesitancy among patients to participate actively and sign up for the program. A key limitation of the project is the lack of coverage by some insurance

companies for the National Diabetes Prevention Program (NDPP), coupled with the initial cost of $45 and a subsequent $10 fee for each session. Given the financial and time investment required, many full-time employed patients are reluctant to commit to the NDPP. On the positive side, the program's administration is proactively engaging with referred patients by contacting them weekly for three weeks, providing education on the NDPP's advantages. Furthermore, the dietitian's office has distributed updated referral forms and additional educational materials across clinics. The project site has also fostered a collaborative relationship with the dietitians' office to enhance future participation rates. To support this, the dietitian has offered to periodically conduct in-service sessions across clinics, reinforcing the value of NDPP and instructing on diverse referral techniques.

Interpretation

Provider education was a successful outcome of this project as evidenced by the rollout of education on NDPP across the physicians at the practice. Provider adherence on referral to dietician for education about the NDPP program saw an increased referral rate over the five week time period. There was a lack of awareness of NDPP referral and education within the provider group, and increased education and awareness is key for the success of this program. During the five week period there were no enrollments completed by the dietician into the program. Further research, continuing provider education, and improved patient education on the risks of diabetes are all critical elements to improve the enrollment rate.

Project limitations

The project faced many limitations and one of the limitations of this project was the brief timeframe allocated for data implementation, as observing the outcomes of this quality improvement initiative typically extends beyond a five-week period. Patients may require more

convincing data on their health such as cumulative lab results over six months to a year to monitor trends in HgA1c and fasting glucose levels, which could indicate progression towards diabetes. Additionally, healthcare providers should consistently emphasize the importance of lifestyle changes during each visit. Distributing educational materials on lifestyle modifications at every appointment could serve as a constant reminder of these crucial resources to the patients.

Many patients faced financial challenges due to the costs associated with the program, which required $45 for enrollment and $10 per session under commercial insurance plans. Greater enrollment could be achieved by educating more insurance providers about the benefits of this quality improvement program and securing coverage for it. Patients often express frustration that despite paying monthly premiums, insurance companies are reluctant to cover lifestyle interventions and medications that could prevent chronic diseases.

There was a compliance issue with providers adhering to national standards, as many overlooked prediabetes without implementing any interventions. Providers regularly receive new resources from management and pharmaceutical representatives, which may explain their growing interest in newly available weight loss medications for managing chronic condition risk factors due to their promise of quick results. Although providers offered verbal counseling during visits on NDPP, they frequently did not refer patients to the National Diabetes Prevention Program. If such referrals were made, the community center would have followed up with the patient for three consecutive weeks to provide education about the program.

Another major limitation to this project is that only one community center was utilized for the purpose of this project although the NDPP is offered at 3 more locations across town. Most patients were educated and referred to the community center close to the project site and due to the distance, many patients were reluctant to commit.

Efforts made to address and minimize limitations

Efforts to address shortcomings include educating healthcare providers about the National Diabetes Prevention Program (NDPP) and strengthening collaboration with the NDPP coordinator. Registered Dietitian and diabetes educator, Sherry Poinier, has set up in-service training sessions at every clinic to further this education. Additionally, Sherry Poinier has facilitated coordination among various branches of her program, allowing patients to select their preferred location when scheduling appointments.

Conclusion

The primary objective of the project was to assess the effectiveness of lifestyle modification coaching by primary care providers and to promote patient enrollment in the National Diabetes Prevention Program, aiming to prevent the transition from prediabetes to diabetes. The project used IOWA Model of Evidenced Based Practice which helps emphasizes the involvement of key stakeholders, including healthcare providers, administrators, and patients, in the decision-making process.

The findings from this project demonstrate that implementing a referral program increased patient screening for prediabetes, provided awareness on lifestyle modifications, and facilitated referrals to the National Diabetes Prevention Program (NDPP). Although there were no enrollments in the NDPP within the five-week period, the initiative was still valuable to the primary care clinic as it raised awareness about lifestyle changes among patients. Continued efforts are necessary to further enhance these metrics and improve the program's overall effectiveness. To achieve this, strategies such as ongoing education for primary care providers, regular updates to educational materials based on the latest evidence, and the incorporation of

patient feedback should be implemented. These measures will help sustain and expand the positive impact of the prediabetes education and referral program. The usefulness of this project is the creation of a workflow in the site which includes educating and referring prediabetic patients to NDPP program offered at the community center. Patients will ultimately benefit from accessing a CDC-approved program that aims to transform their lives by fostering a healthy lifestyle, potentially preventing the onset of diabetes.

The project site plans on supporting this project, but sustainability depends on provider engagement, patient engagement, and community center resources. Strategies to address prediabetes prevention should include communication guidance for PCPs, increasing PCP understanding of guidelines, provider-led patient education, and ensuring that patients are aware of their prediabetes diagnosis (McConnell, Richards, Gallegos, & Tashijian-Gibbs, 2023). One of the providers, who has a background as a dietitian, is being considered by the medical director for certification to deliver the National Diabetes Prevention Program within the medical group. This initiative aims to ensure that patients can access necessary resources directly within the medical practice, thereby reducing the need to seek external support. The long-term sustainability of the National Diabetes Prevention Project can ultimately improve health outcomes for patients at risk of diabetes.

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Appendix A

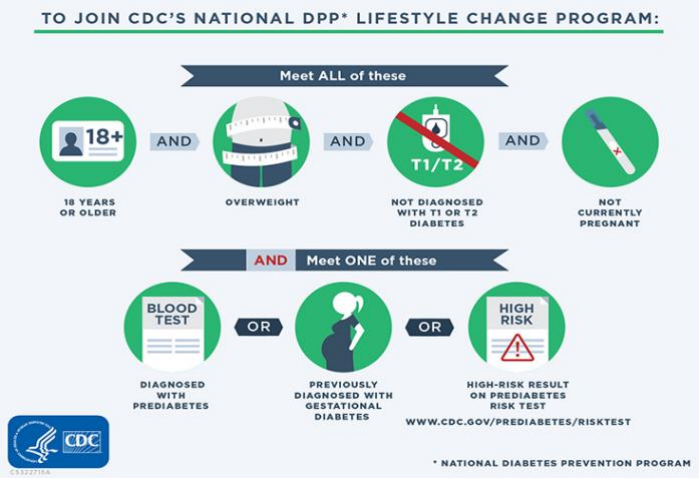
Program Eligibility

Centers for Disease Control and Prevention

National Diabetes Prevention Program

National Diabetes Prevention Program Home

Program Eligibility



To participate in a CDC-recognized lifestyle change program, you'll need to meet **ALL 4** of these requirements:

1. Be 18 years or older.
2. Have a body mass index (BMI) of 25 or higher (23 or higher if Asian American).
3. Not be previously diagnosed with type 1 or type 2 diabetes.
4. Not be pregnant.

You'll also need to meet **1** of these requirements (unless you're enrolling in the Medicare Diabetes Prevention Program, which has different criteria):

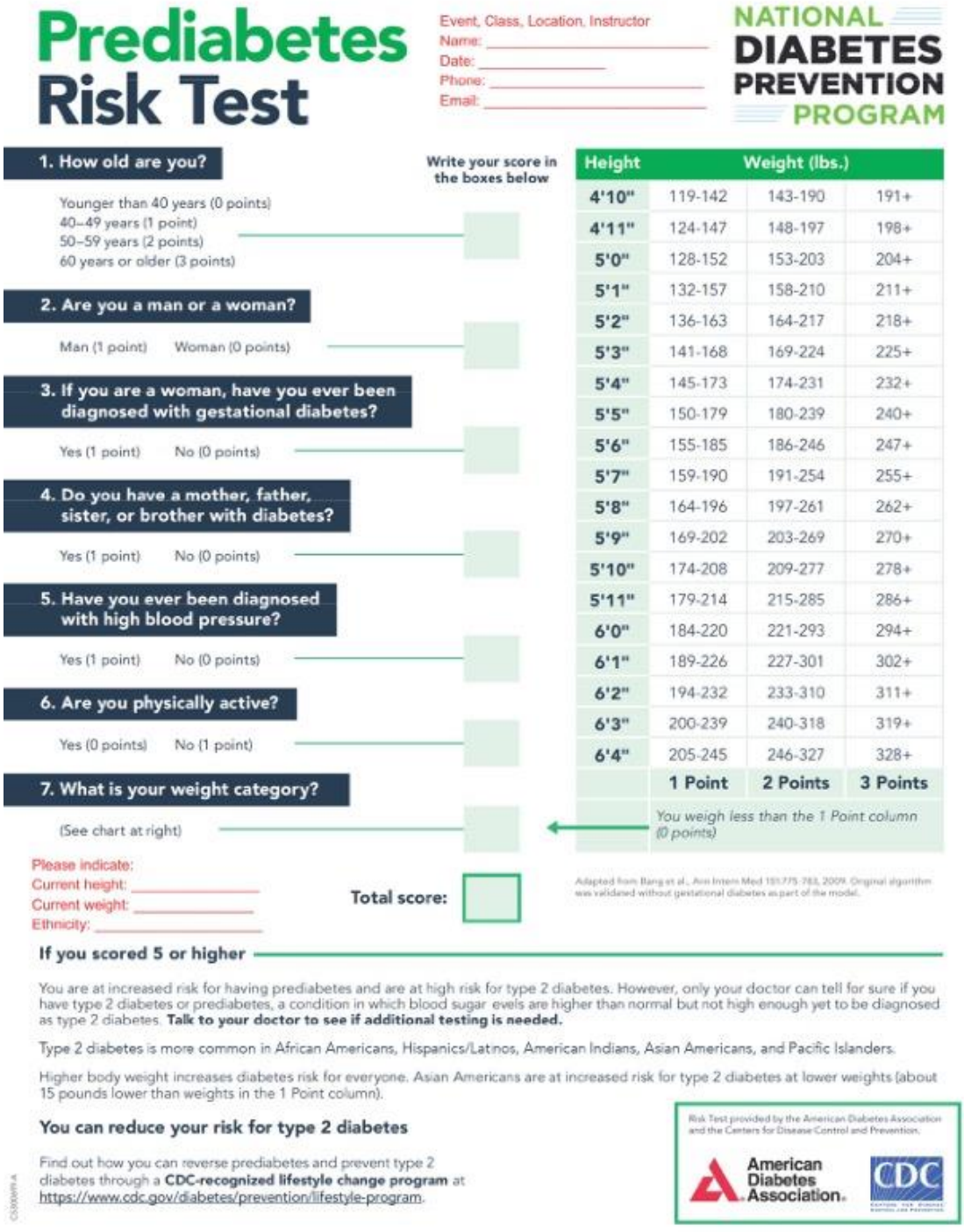
1. Had a blood test result in the prediabetes range within the past year (includes **any** of these tests and results):
    - Hemoglobin A1C: 5.7–6.4%.
    - Fasting plasma glucose: 100–125 mg/dL.
    - Two-hour plasma glucose (after a 75 g glucose load): 140–199 mg/dL.
2. Be previously diagnosed with gestational diabetes (diabetes during pregnancy).
3. Received a high-risk result (score of 5 or higher) on the Prediabetes Risk Test.

Ready to get started? Find a lifestyle change program (online or in person) that works for you.

Download National DPP Program Eligibility [PDF – 329 KB] [PDF – 512 KB]

Appendix B

Prediabetes Risk Test



Prediabetes Risk Test

Event, Class, Location, Instructor
Name: _____
Date: _____
Phone: _____
Email: _____

NATIONAL DIABETES PREVENTION PROGRAM

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)

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+
	1 Point	2 Points	3 Points

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

Please indicate:
Current height: _____
Current weight: _____
Ethnicity: _____

Total score:

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.**

Type 2 diabetes is more common in African Americans, Hispanics/Latinos, American Indians, Asian Americans, and Pacific Islanders.

Higher body weight increases diabetes risk for everyone. Asian Americans are at increased risk for type 2 diabetes at lower weights (about 15 pounds lower than weights in the 1 Point column).

You can reduce your risk for type 2 diabetes

Find out how you can reverse prediabetes and prevent 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.

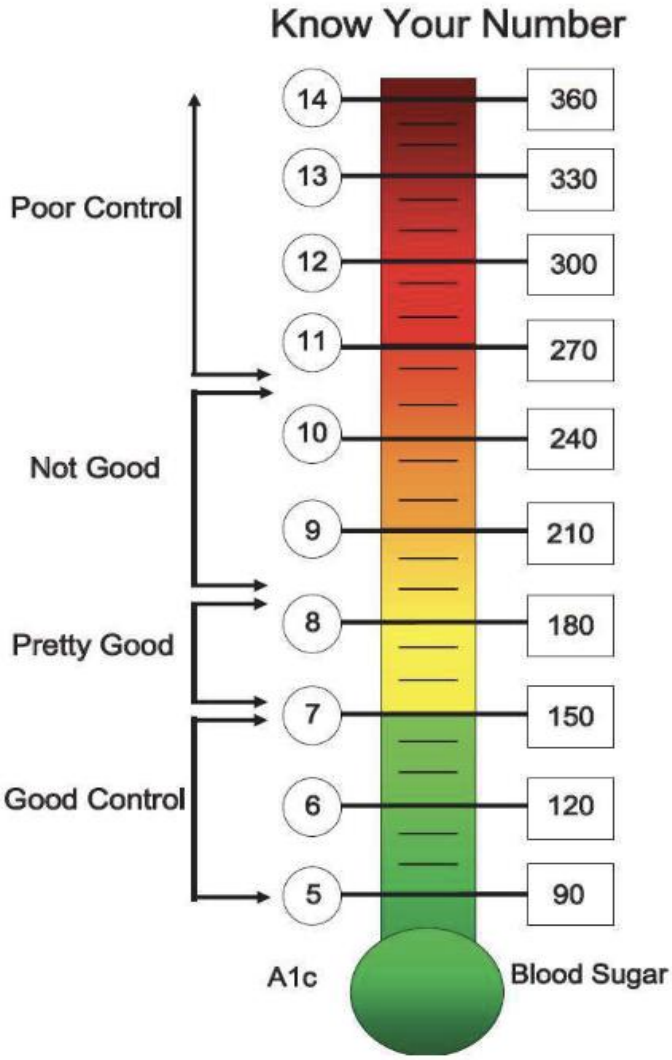
American Diabetes Association. CDC

Appendix C

Hemoglobin A1c Thermometer

His Branches Health Services

Lowering Your HgbA1c Level



Goals:

People with diabetes should aim for an A1c level of less than 7, and as close to non-diabetic levels as possible (see thermometer).

Getting your A1c below 7 means testing your blood sugar often enough to keep your pre-meal blood glucose below 150.

A1c levels above 7 are considered elevated, and levels above 8 indicate the need for a change in diabetes management.

Follow the simple steps on the next page to lower your A1c:

Appendix D

National Diabetic Prevention Program

National Diabetes Prevention Program

Led by the Centers for Disease Control and Prevention (CDC)

Did you know that one of three U.S. adults has prediabetes? Most don't know it.

What is prediabetes?

This means your blood sugar (glucose) level is higher than normal, but not high enough to be diagnosed as diabetes. Nearly 90 percent of adults who have prediabetes don't know they have it.

Those who have prediabetes combined with poor weight management and/or minimal physical activity could develop type 2 diabetes within five years.

It's time to take charge of your health. Prevent Type 2 diabetes with the National Diabetes Prevention Program!

This CDC-approved 12 month program is given in 16 weekly sessions, followed by monthly maintenance sessions. Lifestyle Coach and Registered Dietitian, Sherry Poinier will help you develop healthy eating habits, increase your physical activity, and help keep you motivated to make healthy changes.

Participating in this program will help you:

- Learn the skills you need to lose weight, be more physically active, and manage stress
- Connect with a lifestyle coach to guide and encourage you
- Gain support from other members who have similar goals

Dignity Health Womens*Care* & Community Outreach Center
2651 Paseo Verde Pkwy, Ste 180
Thursdays, 3:00 to 4:00 p.m.
2024-2025 Classes

Feb 15, 22, 29	June 13, 27	October 10, 24
March 7, 21, 28	July 11, 18	November 7, 21
April 4, 11, 25	August 1,15, 29	December 5, 19
May 2, 9, 16, 30	September 12, 26	January 9, 2025

Take advantage of our class discount - $40 to enroll, $10 per session! Ask us about our scholarship opportunities.
To register, please call 702.616.4975.

Dignity Health
St. Rose Dominican

National Diabetes Prevention Program

Recognized by the CDC – To Prevent or Delay Type 2 Diabetes