

Preventing Type II Diabetes in the Family Practice Setting



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Introduction

Type II diabetes mellitus (DMII) is a growing problem globally and in the United States. Primary care providers are often the first to identify chronic diseases. Primary care providers should focus on prevention of DMII by identifying patients who are at risk for diabetes and collaborating with them to prevent it (Pattison M. E., 2024a).

Purpose Statement

The purpose of this project is to educate healthcare providers on how to identify individuals who are at risk of developing DMII and collaborating with these individuals to prevent it while using evidence-based practices.

GOAL:

In patients who have been diagnosed with prediabetes, decrease the HgA1c by a minimum of 0.15% in 6 months by educating patients on lifestyle changes and implementing a continuous glucose monitor to be used with a diet and exercise diary.

Current Evidence

According to the Centers for Disease Control and Prevention (CDC) (2024), in 2021, 38.4 million Americans had diabetes. 8.7 million of those Americans had yet to be diagnosed with diabetes. Even more interesting, 97.6 million Americans who were ages eighteen and older had prediabetes and 80% of these individuals did not know that they are prediabetic.

Continuous glucose monitors (CGM) are devices that have a sensor which is placed subcutaneously and is linked with a smartphone or handheld device to monitor glucose levels in the interstitial fluid and can do the following

- Allow the wearer to track their blood glucose levels 24 hours a day (Cleveland Clinic, 2024)
- Monitor changes in glucose levels related to diet, exercise, and stress.

Multiple studies have been done in the United States, Europe, and Japan to study glucose levels of:

- People who have been diagnosed with diabetes,
- Have not been diagnosed with diabetes but are at risk for diabetes due to metabolic or non-metabolic diseases, and
- People who suffer from mental health issues such as stress or anxiety, and elite athletes (Espinoza, et al., 2023)

The conclusion of these studies is that wearing a CGM can provide information about how diet, exercise, medical conditions, medications, and stress can affect a person's glucose levels (Espinoza, et al., 2023).

Methodology

Population:

- Patients aged 18 years and older with A1c between 5.7-6.4% (Prediabetes)
- Subjects who have taken medications to manage their blood glucose levels, such as metformin, SGLT2 inhibitors, and GLP-1 receptor agonists within 3 months of the beginning of the study will be excluded.

This study will take place in the primary care setting.

Subjects participating in this study will provide informed consent. Their personal health information will be protected in accordance with the Health Insurance Portability and Accountability Act (HIPAA).

Cost Analysis

CGM: Abbot Freestyle Libre Pro

- Meter - \$100
- Sensors - \$150/28 days

(GoodRx, 2024)

Visits with providers can be billed to patient insurance if available.

Design

Informed consent for participation will be provided for subjects who voluntarily participate in this study. There will be a form signed by the subject and a witness to document this.

Subjects will be divided into two groups.

Both groups will collaborate with their healthcare professionals on lifestyle modifications in the areas of diet and exercise necessary to improve their HbA1c levels. These plans will be tailored to each person's cultural, linguistic, and socioeconomic needs.

Each subject will follow up with their provider at 4 weeks, 8 weeks, and 12 weeks.

At the beginning of each study and at each follow up appointment, the subjects would have their vital signs, height, weight, and abdominal circumference measured.

Each subject will be given surveys evaluating their understanding of prediabetes and diabetes, how diet and exercise affects these conditions, and measure of their quality of life and how empowered they feel to control their health at the beginning and end of the study..

Each subject will have their HbA1c levels checked at the beginning and end of the study

Group 1:

- Subjects will be instructed to keep a diary of the foods they eat and moderate to intense exercise they participate in.

Group 2:

- Subjects will each be given a CGM and educated on how to use it
- Each subject will be instructed to keep a diary of the foods they eat, moderated to intense exercise they participate in, and how it impacts their glucose levels.
- For the first 2 weeks of the study, these subjects will be instructed to eat as they normally do, so they can see how different foods affect their glucose levels. They would then meet with their healthcare professional to review the results and come up with a goal range to keep their glucose levels within as best they can for the rest of the study.

Anticipated Results

Subjects using the CGM will decrease their A1c by a minimum of 0.15% in 3 months

Future Recommendations

- Positive results of this study would encourage healthcare providers and health insurance providers to focus more on prevention of DMII by treating prediabetes more aggressively.
- It is this writer's hope that this would motivate health insurance companies to cover the cost of CGM in patients diagnosed with prediabetes making it more affordable for more people.

Clinical Implications

Results of the qualitative portion of this study could provide more information on ways to make the lifestyle modifications sustainable for patients allowing for healthcare professionals involved in treating patients with prediabetes to provide better education for patients in diverse socioeconomic and cultural areas.

Conclusion

- DMII is a growing problem in the United States and globally
- Healthcare providers, patients, and health insurance companies should focus on primary prevention of DMII by identifying patients with prediabetes and collaborating with them to prevent it from progressing to DMII
- The use of CGM can empower patients with prediabetes to be aware of how diet and exercise affect their glucose levels and motivate them to make sustainable lifestyle modifications.



References

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