Diabetes Prevention in High-Risk Populations

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Problem Identification

During my rotation, I noticed numerous patients who were surprised to learn that they had prediabetes or type 2 diabetes. In discussions about diet and exercise, some patients did not understand that their lifestyle habits had contributed to their diagnosis or found it difficult to make changes given their limited understanding of a healthy diet and exercise regimen. With limited time to discuss diabetes prevention during a typical office visit, providers are not always able to provide the necessary information to at-risk populations nor did I find that they had readily available materials to educate patients.

Interprofessional Education & Medical Practice Transformation:

Having educational, easy-to-read, and readily available pamphlets for patients demonstrates a patient-centered approach to care. An ideal educational pamphlet would include at least one recipe idea, online and in-person resources, nutrition and exercise facts. Providers who review these pamphlets with patients can answer questions and help patients develop a plan within minutes. Simply emphasizing a good diet and more exercise does not always help patients understand. Having ready-available materials means that patient have a guide to reference at-home to aid in making daily changes that may cut down on office visits, because they are making improved health decisions.

Cultural Competency:

The Mediterranean diet is often praised for its health benefits. However, most patients do not follow a Mediterranean and want to eat within their own culture. Given the immense diversity in the Greater Danbury area and even within the Primary Care Physicians of Newtown, it is nearly impossible for providers to have a breadth of knowledge about each culture. Including I examples of non-starchy and starchy vegetables that are often included in Asian and/or Latin cuisines, along with a recipe idea in educational material is a great way to demonstrate that providers care about a person's culture and that they can succeed in preventing or delaying diabetes while still eating culturally aligned meals.

Public Health Costs

According to the American Diabetes Association, estimated the annual cost of diabetes in 2022 was $412.9 billion[1].

While local cost data for the Greater Danbury area is unavailable, the rate of hospitalizations and ED visits from 2018 to 2021 for type 2 diabetes was 561 (RR 1.9 compared to surround towns) in Danbury[2].

Community Perspectives

I interviewed 2 professionals within the Greater Danbury area who work closely with individuals with diabetes. They each provided their insights to questions provided. Here are a couple of quotes from those interviews.

A pharmacist who is also a trained diabetes nutrition educator, counseling patients on their diabetes and reviewing their glucose values weekly. They focused on addressing barriers to healthy eating and identifying changes that individuals can make in their routine.

What are the most common nutrition mistakes or barriers you see in this community?
"One barrier that I have seen is that some patients do not have direct control over their food intake because they are on a strict budget and get their food from a food pantry. In these situations, I educate the patients on healthy alternatives that would likely be available at the food pantry, such as increasing fiber with canned beans, or pairing a piece of toast with peanut butter for added protein in the morning."

An endocrinologist who oversees the clinical management of individuals with diabetes. They focused on the importance of good record-keeping, organization, and knowledgeability about the providers they see and medications they take.

In your clinical experience, what prevents patients from taking preventive health advice seriously?
"*Life is busy, so sometimes patients may not schedule routine medical appointments for themselves. I recommend keeping a small planner specifically dedicated to health info tracking (e.g., medical appointments, or exercise schedule). "*

Intervention and Methodology

1. I created 6 questions for interview participants to answer. The first 4 questions were asked of all participants, but the last 2 questions were focused on their specific roles in the community.
2. Identified 4 participants across 3 disciplines: 1 pharmacist, 2 physicians, and 1 dietitian.
3. I emailed each potential participant about my project, informing them that their responses would be included in educational materials and would be anonymized.
4. Two of the four individuals responded and completed the questions.
5. I used already known resources such as the American Diabetes Association and CDC, and resources acquired through web searches (i.e., Move Your Way) to develop a diabetes prevention pamphlet
6. Emailed two providers from 2 separate practices in the Greater Danbury area and one community center director about disseminating my pamphlets to patients or display them in-office or in the community center. None responded at the time of submission of project. However, if they do respond, I will provide the pamphlet

Please see attached for PDF of 2-page pamphlet created

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Interview Questions

1.From your perspective, what are the biggest challenges people in this community face in preventing diabetes?

2.What's one small, realistic change you wish more people would make for their health?

3.What's a common myth or misconception people have about diabetes or healthy living?

4.Are there any local resources, programs, or tips you recommend for someone trying to prevent diabetes?

<u>Questions for Pharmacist and Diabetes Nutrition Counselor</u>

1.What are the most common nutrition mistakes or barriers you see in this community?

2.How do you talk to patients about healthy eating without making them feel overwhelmed or judged?

<u>Questions for Endocrinologist</u>

1.In your clinical experience, what prevents patients from taking preventive health advice seriously?

2.Do you think physicians have enough time and tools to support lifestyle changes in patients?

Results and Reflection

I believe this intervention will help improve health literacy surrounding diabetes in high-risk populations. I also believe that it will elicit meaningful conversations between patients and providers about ways patients can prevent or delay diabetes.

I hope my pamphlet acts as a meaningful resource for patients to refer to about diet and exercise.

To evaluate the effectiveness of the education material, I would survey individuals within the practice such as physicians to determine whether they found the material helpful for their patients. It may be difficult to survey patients, although this would be most ideal, since the intervention is directed at high-risk populations.

There were several challenges faced when implementing this intervention. Developing questions that were broad and yet specific enough for diabetes professionals to answer was my first challenge. Also, I found it difficult to identify and contact the right professionals to obtain insights. Finally, deciding what to include and what not to include in my pamphlet was difficult. There is so much to say about diabetes prevention, but I wanted to focus on the pertinent information that would encourage patients to return to my pamphlet for reference.

Future Directions

Future steps would include developing more in-depth material such as a cookbook with alternatives to popular ethnic dishes that are low-carb and low in sugar. Disseminating this cookbook and obtaining survey responses for those who have tried the meals for 30 days.

I would also like to survey high risk patients (HbA1c 5.7 – 6,4%) about what they believe about low-carb and low sugar diets, and what they find to be challenging about a diet low in carbs.

References

1. American Diabetes Association. Economic Costs of Diabetes in the U.S. in 2022. *Diabetes Care*. 2023;46(4):e1–e10. doi:10.2337/dci23-0085.

2. Nuvance Health. *Danbury Hospital & New Milford Hospital: 2022 Community Health Needs Assessment*. Nuvance Health; 2022. Accessed April 28, 2025. https://www.nuvancehealth.org/-/media/pdf-files/community-health/community-health-needs-assessment/danbury-newmilford-chna-2022.pdf

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Pamphlet References

1. Office of Disease Prevention and Health Promotion. Move Your Way. U.S. Department of Health and Human Services. Accessed May 16, 2025. https://odphp.health.gov/moveyourway

2. American Diabetes Association. Plan Your Plate. Accessed May 10, 2025. https://professional.diabetes.org/sites/dpro/files/2023-12/plan_your_plate.pdf

3. Centers for Disease Control and Prevention. Know Your Risk for Type 2 Diabetes. Accessed May 10, 2025. https://www.cdc.gov/diabetes/riskfactors/index.html

4. Centers for Disease Control and Prevention. Prediabetes Facts and Statistics. Accessed May 10, 2025. https://www.cdc.gov/diabetes/communication-resources/prediabetes-statistics.html

5. American Diabetes Association. Corn and Cheese Phyllo Empanadas. Diabetes Food Hub. Accessed May 17, 2025. https://diabetesfoodhub.org/recipes/corn-and-cheese-phyllo-empanadas.html

CORN & CHEESE PHYLLO EMPANADAS[5]

From the American Diabetes Association's Diabetes Food Hub

TOTAL TIME: 30-35 MINUTES
SERVINGS: 6 (1 EMPANADA EACH)
PER SERVING: 120 CALORIES | 13G CARBS | 5G FAT | 5G PROTEIN | 1G FIBER

INGREDIENTS:

6 sheets phyllo dough (thawed)

Cooking spray or olive oil spray

⅓ cup shredded reduced-fat cheddar cheese

½ cup no-salt-added canned corn, drained

½ tsp smoked paprika

Optional: cilantro or chopped green onion

DIRECTIONS:

Preheat oven to 375°F.

Lay out one sheet of phyllo dough. Lightly spray with cooking spray. Layer with another sheet. Repeat until you have 3 layers
Cut layered sheets into 3 strips.

Mix corn, cheese, and paprika in a bowl.

Spoon filling onto one end of each strip. Fold over into triangles like a flag. Continue folding until sealed.

Place on a baking sheet and spray tops.

Bake for 15-20 minutes until golden and crisp.

Image courtesy of American Diabetes Association

For full recipe and photos:

Resources

Visit: **diabetes.org/about-diabetes/prediabetes** or use the QR code below

YMCA Greenknoll in Brookfield offers a Diabetes Prevention Program. For more information, visit **https://bit.ly/greenknoll** or use the QR code below:

References

1. Office of Disease Prevention and Health Promotion. Move Your Way. U.S. Department of Health and Human Services. Accessed May 16, 2025. https://odphp.health.gov/moveyourway
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3. Centers for Disease Control and Prevention. Know Your Risk for Type 2 Diabetes. Accessed May 10, 2025. https://www.cdc.gov/diabetes/risk-factors/index.html
4. Centers for Disease Control and Prevention. Prediabetes Facts and Statistics. Accessed May 10, 2025. https://www.cdc.gov/diabetes/communication-resources/prediabetes-statistics.html
5. American Diabetes Association. Corn and Cheese Phyllo Empanadas. Diabetes Food Hub. Accessed May 17, 2025. https://diabetesfoodhub.org/recipes/corn-and-cheese-phyllo-empanadas.html

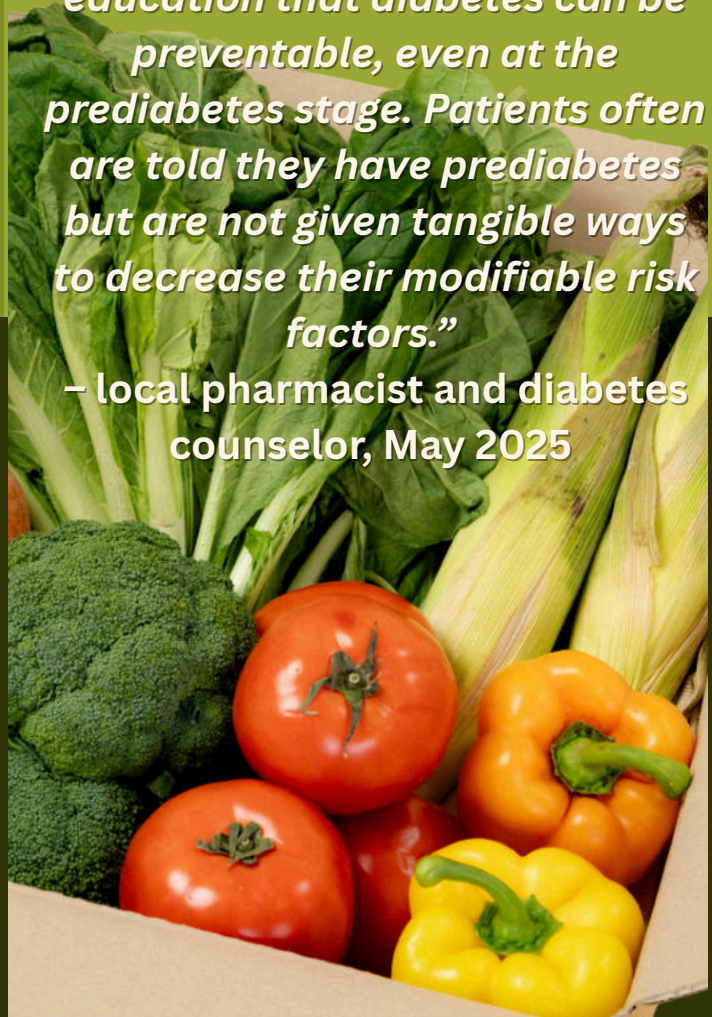
Quotes from local community interviews conducted in May 2025. Names withheld for privacy.

This material was created by a student of University of Vermont Larner College of Medicine

Stop Diabetes Before It Starts

A mini-guide for diabetes prevention

"I believe that there is a lack of education that diabetes can be preventable, even at the prediabetes stage. Patients often are told they have prediabetes but are not given tangible ways to decrease their modifiable risk factors."
– local pharmacist and diabetes counselor, May 2025



FAST FACTS PREDIABETES

- DIABETES CAN BE DELAYED OR PREVENTED THROUGH CHANGES IN WHAT YOU EAT AND EXERCISE[3]
- 1 IN 3 ADULTS HAVE PREDIABETES
- MORE THAN 8 OUT OF 10 ADULTS DON'T KNOW THEY HAVE PREDIABETES[4]

IMAGE COURTESY OF CHRYSALIS SCHOOL MONTANA

What can increase your chances of prediabetes or diabetes?

- Overweight or obese
- Are 45 years of age or older
- Have a parent or sibling with type 2 diabetes
- Exercise less than 3 times a week
- Have been told by your doctor that you have non-alcoholic fatty liver disease
- Have ever had gestational diabetes or given birth to a baby that weighed more than 9 pounds[3]

NUTRITION TIPS

"Plate method [...] can help patients visualize the ideal portion sizes of their nutrients to maintain a healthy diet."
– local pharmacist and diabetes counselor, May 2025

PLATE METHOD

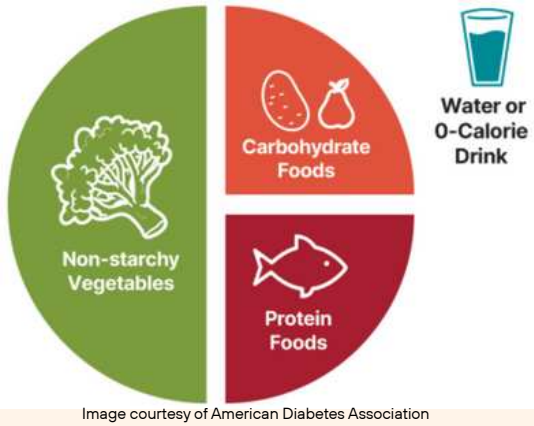


Image courtesy of American Diabetes Association

- **Fill half of plate with non-starchy veggies**
  - **For example: bok choy, cabbage, gai lan, or chayote**
- **Fill one-quarter with grains, starchy veggies, beans, or lentils**
  - **For example: black beans, quinoa, brown rice, or buckwheat soba**
- **Fill one-quarter with protein**
  - **For example: eggs, fish, chicken, or turkey**
- **Avoid sugary drinks, limit sugar or honey in coffee or tea[2]**

Exercise Tips

01 150 MINUTES OF MODERATE INTENSITY EXERCISE EACH WEEK[1]

Moderate intensity exercises should raise your heart rate and breathing to a level that allows you to still talk, but not sing. If 150 minutes seems too scary, start with 5 minutes each day until you've worked your way up to 150 minutes. Also include muscle strength training twice per week.[1]

02 MAKE IT FUN

Exercise doesn't have to feel like a chore. Here are some ideas for getting in physical activity: brisk walk, dancing, bike rides, Pilates, yoga, weight lifting, or resistance bands.[1]

03 MAKE IT COUNT

Make a log of your exercises for you and your provider to discuss and make changes

"I recommend keeping a small planner specifically dedicated to health info tracking (e.g., medical appointments, or exercise schedule)."
– local physician, May 2025