Practice Guidelines

Prevention or Delay of Type 2 Diabetes Mellitus: Recommendations From the American Diabetes Association

Key Points for Practice

- Prediabetes is not a diagnosis but rather an opportunity to prevent or delay a future diagnosis of type 2 diabetes.
- Intensive lifestyle programs are the most effective intervention for preventing or delaying a diagnosis of diabetes in patients with prediabetes.
- In patients with prediabetes, metformin therapy will slow the progression to type 2 diabetes, although less effectively than lifestyle programs over time.
- In patients who have had gestational diabetes, the benefits of metformin therapy are similar to those of lifestyle programs.

From the *AFP* Editors

Screening high-risk individuals for diabetes mellitus is essential because approximately one-fourth of Americans with diabetes are undiagnosed. The American Diabetes Association (ADA) recommends screening all adults 45 years and older for diabetes every three years using A1C, fasting glucose, or two-hour glucose tolerance testing. People younger than 45 years who are overweight or obese and are at high risk because of a family history, certain medical conditions (e.g., cardiovascular disease, hypertension, dyslipidemia, polycystic ovary syndrome), or physical inactivity and those who belong to a high-risk racial or ethnic group (i.e., African American, Latino, Native American, Asian American, and Pacific Islander) or who have signs of insulin resistance (e.g., severe obesity, acanthosis nigrans, small-for-gestational age birth weight) should also receive regular testing.

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This series is coordinated by Michael J. Arnold, MD, contributing editor.

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Classifying screening test results as indicative of prediabetes shows an increased risk of a future diagnosis of type 2 diabetes and provides an opportunity for prevention. Criteria for prediabetes, including A1C levels of 5.7 to 6.4, fasting plasma glucose of 100 to 125 mg per dL (5.55 to 6.94 mmol per L), or two-hour glucose of 140 to 199 mg per dL (7.77 to 11.04 mmol per L) after a 75-mg oral glucose load, identify individuals for whom diabetes prevention will be beneficial. The ADA has released updated guidelines for the prevention or delay of diabetes.

Lifestyle Change

Strong evidence supports lifestyle interventions to delay or prevent diabetes. Programs that include diet, weight loss, and exercise reduce type 2 diabetes diagnoses by up to 58% over three years. Over longer periods, 27% to 43% of people will avoid a diagnosis of diabetes with sustained lifestyle changes.

Programs should be modeled after the National Diabetes Prevention Program, which targets sustained weight loss of at least 7% of body weight and at least 150 minutes of moderate-intensity exercise weekly. Although weight loss is considered the most important factor for lowering the risk of type 2 diabetes, achieving the physical activity goal of at least 150 minutes per week can reduce diabetes incidence by 44% without weight loss.

Because no optimal diet has been identified to prevent the onset of diabetes, dietary counseling should be tailored to individual preferences. A Mediterranean-style or low-carbohydrate diet, and perhaps a vegetarian, plant-based, or Dietary Approaches to Stop Hypertension (DASH) diet, can reduce the risk of developing type 2 diabetes.

The National Diabetes Prevention Program brings evidence-based lifestyle change programs into communities. Overweight, nonpregnant adults with prediabetes can be referred to the program by their physician, or patients may self-refer (https://www.cdc.gov/diabetes/prevention/find-a-program.html).

Medications

Medications can delay or prevent type 2 diabetes but are less effective than lifestyle programs. Metformin has the strongest evidence, whereas liraglutide, insulin, thiazolidinediones, alpha-glucosidase inhibitors, orlistat (Xenical), and phentermine/topiramate (Qsymia) all have some evidence of benefit. Initially, metformin is nearly as effective as lifestyle modification; however, over time, lifestyle interventions demonstrate clear superiority. In patients with previous gestational diabetes, metformin reduces diabetes incidence by 50%, equivalent to lifestyle changes. Because long-term use of metformin can lead to vitamin B_{12} deficiency, monitoring vitamin B_{12} levels should be considered.

Cardiovascular Risk Prevention

Because diabetes increases cardiovascular risk, identifying prediabetes provides an opportunity to reduce that risk. Treating hypertension, dyslipidemia, and tobacco dependence should be considered. Because smoking cessation can increase diabetes risk for several years, tobacco cessation should be combined with diabetes prevention.

Monitoring

Although evidence is limited, annual laboratory monitoring is recommended for patients with prediabetes to track treatment effectiveness and the development of type 2 diabetes.

Editor's Note: Prediabetes is controversial because it describes a population at increased risk rather than a current or future diagnosis or any definitive harm. We must decide what to do with the opportunity for prevention from borderline laboratory results. These ADA recommendations support and add to recent recommendations from the U.S. Preventive Services Task Force (USPSTF; https://www.aafp.org/afp/2022/0100/od1.html). Although the USPSTF recommends regular diabetes screening for adults 35 to 70 years of age who are overweight or obese, the ADA recommends screening all adults 45 years and older, as well as any adult who is overweight or obese and has one or more additional risk factors. Race is included as a risk factor by the ADA, although it is a social construct that may not represent a genetic predisposition. The USPSTF and ADA suggest three-year screening intervals and lifestyle interventions, metformin, or both for patients with prediabetes. This ADA guideline adds more specifics to these recommendations.—Michael J. Arnold, MD, Contributing Editor

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