

# Practice Guidelines

## Diabetes: ADA Releases Revised Position Statement on Standards of Medical Care

### Key Points for Practice

- Testing for diabetes should be performed annually in persons who already have prediabetes, every three years in women who have had gestational diabetes, and starting at 45 years of age in all other persons.
- Patients with prediabetes should be referred to a behavioral lifestyle intervention program to encourage weight loss (7% of body weight) and 150 minutes of physical activity per week.
- In patients with atherosclerotic cardiovascular disease, treatment should start with lifestyle changes and metformin, with the addition of medications that decrease the risk of adverse cardiovascular events and cardiovascular mortality when dual therapy is needed.

From the *AFP* Editors

**Because the evidence** regarding medical care for persons with diabetes mellitus continues to evolve, the American Diabetes Association (ADA) annually updates its standards. In addition, starting in 2018, the ADA will also periodically update its guidance online if warranted. As with previous updates, this 2018 update is based on the most current evidence available regarding treatment of diabetes.

### Diagnosis

Testing for prediabetes and type 2 diabetes in asymptomatic persons younger than 18 years should be performed in those who are overweight with at least one of the following factors: maternal history of diabetes or gestational diabetes, a first- or second-degree relative with type 2 diabetes, a high-risk ethnicity or race, or signs of insulin resistance or conditions connected to insulin resistance such as acanthosis nigricans, polycystic ovary syndrome, and dyslipidemia.

Testing for prediabetes or diabetes should be performed in asymptomatic adults who are overweight or obese with at least one of the following factors: a first-degree relative with

diabetes, a high-risk ethnicity or race, history of cardiovascular disease, hypertension, a high-density lipoprotein level of less than 35 mg per dL (0.91 mmol per L) or a triglyceride level greater than 250 mg per dL (2.8 mmol per L), physical inactivity, polycystic ovary syndrome, or a condition connected with insulin resistance.

Testing should be performed annually in persons who already have prediabetes, every three years in women who have had gestational diabetes, and starting at 45 years of age in all other persons with repeat testing performed at least every three years if results are normal. Although not typically recommended because of inaccessibility of follow-up testing and care or lack of appropriate follow-up by patients with positive results, community screening outside of health care facilities can be considered in certain circumstances, assuming there is an appropriate place of referral already in place.

Screening for diabetes can be performed using plasma glucose (i.e., fasting plasma glucose or the two-hour plasma glucose value during a 75-g oral glucose tolerance test) or A1C measurement; however, recent data have indicated that A1C measurement is limited because of assay interference from factors such as hemoglobin variants, race (e.g., black persons), ethnicity, and conditions linked to red blood cell turnover (e.g., anemia, end-stage kidney disease). For this reason, the ADA has provided new recommendations about its use in these situations, as well as in the general population. Significant difference between results on A1C and plasma glucose measurements indicates that the A1C measurement may not be reliable for a particular patient. For patients with a hemoglobin variant, but with normal red blood cell turnover (e.g., sickle cell trait), an A1C assay without interference from hemoglobin variants or plasma glucose testing should be used. Only plasma glucose measurement should be used to diagnose diabetes in patients with conditions associated with red blood cell turnover (e.g., sickle cell disease, late pregnancy, hemodialysis, recent blood loss or transfusion).

**Coverage of** guidelines from other organizations does not imply endorsement by *AFP* or the AAFP.

**This series** is coordinated by Sumi Sexton, MD, Editor-in-Chief.

**A collection** of Practice Guidelines published in *AFP* is available at <https://www.aafp.org/afp/practguide>.

**CME** This clinical content conforms to AAFP criteria for continuing medical education (CME). See CME Quiz on page 149.

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## Prevention

In patients with prediabetes, referral to a behavioral lifestyle intervention program modeling the Diabetes Prevention Program should be made to encourage weight loss (7% of body weight) and 150 minutes of physical activity per week. Monitoring for diabetes in these patients should be performed yearly, and metformin can be considered to prevent escalation to type 2 diabetes, especially for patients with a body mass index of at least 35 kg per m<sup>2</sup>, those younger than 60 years, and women who have had gestational diabetes. It should be noted that adverse effects of long-term metformin use may include vitamin B<sub>12</sub> deficiency; therefore, levels should be measured periodically, especially in patients with anemia or peripheral neuropathy.

## Treatment

### LIFESTYLE MANAGEMENT

Lifestyle management can include self-management education and support, nutrition therapy, exercise, smoking cessation, counseling, and psychosocial treatment. Self-management education and support can be provided in a group or individual setting, or via technology. Nutrition therapy aims to support healthy eating habits, as well as meeting weight, glycemic, blood pressure, and lipid goals. However, no ideal macronutrient distribution has been identified, and each patient's plan should be individualized to his or her preferences and goals. The role of low-carbohydrate diets is unclear because improvements appear to be short term and not maintained.

### GLYCEMIC TARGETS

Serum glucose self-monitoring is especially important for those treated with insulin, to identify asymptomatic hypoglycemia. In patients using intensive insulin regimens, it should be performed before any meal or physical activity, at bedtime, and postprandially on occasion if low blood glucose levels are suspected. This should continue until the patient has normal blood glucose levels, as well as before driving or other important activities.

Based on new evidence, the recommendation for the use of continuous glucose monitoring in adults with type 1 diabetes has been expanded from 25 years and older to include persons older than 18 years with type 1 diabetes who are not meeting glycemic targets. Continuous glucose monitoring measures interstitial glucose and typically includes an alarm for hypoglycemic and hyperglycemic episodes and requires confirmatory self-glucose testing, but newer devices are available that do not rely on these features.

### PHARMACOTHERAPY

*Type 1 Diabetes.* Intensive prandial and basal insulin, or continuous subcutaneous insulin should be prescribed in most patients with type 1 diabetes, as should rapid-acting insulin to reduce the risk of hypoglycemia. Education should

be provided for matching insulin dosage with carbohydrate intake, blood glucose levels before eating, and possible exercise or other physical activity.

*Type 2 Diabetes.* Metformin is the first-line medication for type 2 diabetes; however, insulin can be considered in newly diagnosed asymptomatic patients, those with an A1C level of at least 10%, or whose blood glucose level is at least 300 mg per dL (16.7 mmol per L). Dual therapy can also be considered in newly diagnosed patients with an A1C level of at least 9%.

All medication decisions should be based on effectiveness, risk of hypoglycemia, history of atherosclerotic cardiovascular disease, adverse effects, cost, patient preference, and effect on weight. In patients with atherosclerotic cardiovascular disease, treatment should initially start with lifestyle changes and metformin, with other diabetes medications that decrease the risk of adverse cardiovascular events and cardiovascular mortality (such as empagliflozin [Jardiance] or liraglutide [Victoza]) added later. Patients without atherosclerotic disease who are not meeting A1C targets after three months of monotherapy or dual therapy should have an antihyperglycemic medication added to their regimen based on evaluation of drug effects and patient factors. In all patients with type 2 diabetes, medications should be continually assessed and adjusted if needed. If glycemic targets are not being met, the medication dosage can be increased or insulin added immediately. Treatment with metformin should be continued in combination with other medications, assuming it is tolerated and not contraindicated.

**Editor's Note:** The AAFP recommends screening for abnormal blood glucose in adults 40 to 70 years of age who are overweight or obese: <https://www.aafp.org/patient-care/clinical-recommendations/all/diabetes-screening.html>. The AAFP endorses the statement from the American College of Physicians on "Oral Pharmacologic Treatment of Type 2 Diabetes Mellitus": <https://www.aafp.org/patient-care/clinical-recommendations/all/type2-diabetes.html>; <https://www.aafp.org/afp/2017/1001/p472.html>. Metformin should be prescribed first, and when indicated, a second medication can be selected from any of the classes (i.e., sulfonylurea, thiazolidinedione, sodium-glucose cotransporter 2 inhibitor, or dipeptidylpeptidase-4 inhibitor) based on a discussion of benefits, adverse effects, and costs.

**Guideline source:** American Diabetes Association

**Evidence rating system used?** Yes

**Systematic literature search described?** Yes

**Guideline developed by participants without relevant financial ties to industry?** No

**Recommendations based on patient-oriented outcomes?** Yes

**Published source:** *Clinical Diabetes*. January 2018;36(1):14-37

**Available at:** <http://clinical.diabetesjournals.org/content/36/1/14>

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