



# Summary of Evidence-Based Recommendations

All practice recommendations are from the **American Diabetes Association**.

**Source:** Executive Summary: Standards of Medical Care in Diabetes—2009. *Diabetes Care* 2009;32:S6-S12.

**Website:** [http://care.diabetesjournals.org/cgi/content/full/32/Supplement\\_1/S6](http://care.diabetesjournals.org/cgi/content/full/32/Supplement_1/S6)

**Strength of Evidence:** The strength of evidence is indicated following each recommendation. See table below for description of evidence levels.

## Screening

**Recommendation #1:** Testing to detect pre-diabetes and type 2 diabetes in asymptomatic people should be considered in adults of any age who are overweight or obese (BMI  $\geq 25$  kg/m<sup>2</sup>) and who have one or more additional risk factors. In those without these risk factors, testing should begin at age 45 years. (B)

## Prevention

**Recommendation #2:** Patients with IGT (A) or IFG (E) should be referred to an effective ongoing support program for weight loss of 5–10% of body weight and increasing physical activity to at least 150 min/week of moderate activity such as walking.

**Recommendation #3:** In addition to lifestyle counseling, metformin may be considered in those who are at very high risk for developing diabetes (combined IFG and IGT plus other risk factors such as A1C  $>6\%$ , hypertension, low HDL cholesterol, elevated triglycerides, or family history of diabetes in a first-degree relative) and who are obese and under 60 years of age. (E)

## A1C Goals

**Recommendation #4:** Lowering A1C to below or around 7% has been shown to reduce microvascular and neuropathic complications of type 1 and type 2 diabetes. Therefore, for microvascular disease prevention, the A1C goal for nonpregnant adults in general is  $<7\%$ . (A)

**Recommendation #5:** Long-term follow-up of DCCT and UKPDS cohorts suggests that treatment to A1C targets below or around 7% in the years soon after the diagnosis of diabetes is associated with long-term reduction in risk of macrovascular disease. (B)

**Recommendation #6:** Several studies suggest a small but incremental benefit in microvascular outcomes with A1C values closer to normal. Therefore, for selected patients, providers might reasonably suggest an A1C goal that is lower than the general goal of  $<7\%$ , if this can be achieved without significant hypoglycemia or other adverse effects. Such patients might include those with short duration of diabetes, long life expectancy and no significant CVD. (B)



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**Recommendation #7:** Less stringent A1C goals may be appropriate for patients with a history of severe hypoglycemia, limited life expectancy, advanced microvascular or macrovascular complications, and extensive comorbid conditions, and those with longstanding diabetes in whom the <7% goal is difficult to attain despite self-management education, appropriate self-monitoring, and effective doses of multiple glucose-lowering agents including insulin. (C)

### Bariatric Surgery

**Recommendation #8:** Bariatric surgery should be considered for adults with BMI  $\geq 35$  kg/m<sup>2</sup> and type 2 diabetes, especially if the diabetes is difficult to control with lifestyle and pharmacologic therapy. (B)

**Recommendation #9:** Although small trials have shown glycemic benefit of bariatric surgery in patients with type 2 diabetes and BMI of 30–35 kg/m<sup>2</sup>, there is currently insufficient evidence to generally recommend surgery in patients with BMI <35 kg/m<sup>2</sup> outside of a research protocol. (E)

#### Smoking Cessation and Physical Activity

**Recommendation #10:** Advise all patients not to smoke.(A) and include smoking cessation counseling and other forms of treatment as a routine component of diabetes care. (B)

**Recommendation #11:** People with diabetes should be advised to perform at least 150 min/week of moderate-intensity aerobic physical activity (50–70% of maximum heart rate). (A)

**Recommendation #12:** In the absence of contraindications, people with type 2 diabetes should be encouraged to perform resistance training three times per week. (A)

### Hypertension

**Recommendation #13:** Patients with diabetes should be treated to a systolic blood pressure <130 mm Hg (C) and a diastolic <80 mm Hg. (B)

**Recommendation #14:** Patients with a systolic BP of 130–139 mm Hg or a diastolic blood pressure of 80–89 mm Hg may be given lifestyle therapy alone for a maximum of 3 months and then, if targets are not achieved, be treated with addition of pharmacological agents. (E)

**Recommendation #15:** Patients with more severe hypertension (systolic blood pressure  $\geq 140$  mm Hg or diastolic  $\geq 90$  mm Hg) at diagnosis or follow-up should receive pharmacologic therapy in addition to lifestyle therapy. (A)

**Recommendation #16:** Pharmacologic therapy for patients with diabetes and hypertension should include an ACE inhibitor or ARB. If one class is not tolerated, the other should be substituted. If needed to achieve BP targets, a thiazide diuretic should be added to those with an estimated GFR  $\geq 30$  ml/min per 1.73 m<sup>2</sup> and a loop diuretic for those with an estimated GFR  $<30$  ml/min per 1.73 m<sup>2</sup>. (C)

**Recommendation #17:** Multiple drug therapy (two or more agents at maximal doses) is generally required to achieve BP targets. (B)

## Lipid Management

**Recommendation #18:** Statin therapy should be added to lifestyle therapy, regardless of baseline lipid levels, for diabetic patients with overt CVD (A) – or without CVD who are over age 40 years and one or more other CVD risk factors. (A)

**Recommendation #19:** For patients at lower risk than those above, statin therapy should be considered in addition to lifestyle therapy if LDL cholesterol remains above 100 mg/dL or in those with multiple CVD risk factors (E)

**Recommendation #20:** If drug-treated patients do not reach the above targets on maximal tolerated statin therapy, a reduction in LDL cholesterol of 30–40% from baseline is an alternative therapeutic goal. (A)

**Recommendation #21:** In individuals without overt CVD, the primary goal is an LDL cholesterol  $<100$  mg/dL (2.6 mmol/L). (A)

**Recommendation #22:** In individuals with overt CVD, a lower LDL cholesterol goal of  $<70$  mg/dL (1.8 mmol/L), using a high dose of a statin, is an option. (B)

**Recommendation #23:** Triglycerides levels  $<150$  mg/dL (1.7 mmol/L) and HDL cholesterol  $>40$  mg/dL (1.0 mmol/L) and  $>50$  mg/dL (1.3 mmol/L) in women are desirable. However, LDL cholesterol–targeted statin therapy remains the preferred strategy. (C)

## Antiplatelet Agents

**Recommendation #24:** Use aspirin therapy (75–162 mg/day) as a primary prevention strategy in those with type 2 diabetes at increased cardiovascular risk, including those who are  $>40$  years of age or who have additional risk factors (family history of CVD, hypertension, smoking, dyslipidemia, or albuminuria). (C)

**Recommendation #25:** Use aspirin therapy (75–162 mg/day) as a secondary prevention strategy in those with diabetes with a history of CVD. (A)

## Definitions of the ADA's Level of Evidence

Level of evidence	Description
A	Clear evidence from well-conducted, generalizable, randomized controlled trials that are adequately powered, including: <ul style="list-style-type: none"> <li>• Evidence from a well-conducted multicenter trial</li> <li>• Evidence from a meta-analysis that incorporated quality ratings in the analysis</li> </ul>
	Compelling nonexperimental evidence, i.e., the “all or none” rule developed by the Centre for Evidence-Based Medicine at Oxford
	Supportive evidence from well-conducted randomized controlled trials that are adequately powered, including: <ul style="list-style-type: none"> <li>• Evidence from a well-conducted trial at one or more institutions</li> <li>• Evidence from a meta-analysis that incorporated quality ratings in the analysis</li> </ul>
B	Supportive evidence from well-conducted cohort studies, including: <ul style="list-style-type: none"> <li>• Evidence from a well-conducted prospective cohort study or registry</li> <li>• Evidence from a well-conducted meta-analysis of cohort studies</li> </ul>
	Supportive evidence from a well-conducted case-control study
C	Supportive evidence from poorly controlled or uncontrolled studies, including: <ul style="list-style-type: none"> <li>• Evidence from randomized clinical trials with one or more major or three or more minor methodological flaws that could invalidate the results</li> <li>• Evidence from observational studies with high potential for bias (such as case series with comparison to historical controls)</li> <li>• Evidence from case series or case reports</li> </ul>
	Conflicting evidence with the weight of evidence supporting the recommendation
E	Expert consensus or clinical experience