

# Standards of Medical Care in Diabetes—2015

## Abridged for Primary Care Providers

American Diabetes Association

The American Diabetes Association's (ADA's) *Standards of Medical Care in Diabetes* is updated and published annually in a supplement to the January issue of *Diabetes Care* (1). Formerly called *Clinical Practice Recommendations*, the “Standards” includes the most current evidence-based recommendations for diagnosing and treating adults and children with all forms of diabetes. ADA's grading system uses **A**, **B**, **C**, or **E** to show the evidence level that supports each recommendation (Table 1).

This is an abridged version of the current Standards containing only the evidence-based recommendations most pertinent to primary care. The tables, figures, and references have been renumbered from the original document. The complete 2015 Standards supplement is available at [professional.diabetes.org/standards](http://professional.diabetes.org/standards).

### STRATEGIES FOR IMPROVING CARE

#### Recommendations

- Patient-centered communication that incorporates patient preferences, assesses literacy and numeracy, and addresses cultural barriers to care should be used. **B**
- Care should be aligned with components of the Chronic Care Model (CCM) to ensure productive interactions between a prepared proactive practice team and an informed activated patient. **A**

#### Diabetes Care Concepts

1. Patient centeredness. Because patients with diabetes are also at greatly increased risk of cardiovascular disease (CVD), a patient-centered approach should include a comprehensive plan to reduce CVD risk.
2. Diabetes across the life span. As people with diabetes live well into older age and incidence of type 2 diabetes is on the rise in children and young adults, the demographics of diabetes are changing. There is therefore a need to improve coordination between clinical teams as patients pass through different stages of life, including pregnancy.
3. Advocacy for patients with diabetes. Given the tremendous toll that lifestyle factors such as obesity, physical inactivity, and smoking have on the health of patients with diabetes, ongoing and energetic efforts are needed to address and change the societal determinants at the root of these problems.

#### Care Delivery Systems

The mean A1C nationally has declined. This has been accompanied by improvements in lipids and blood pressure control. Nevertheless, 33–49% of patients do not meet targets for glycemic, blood pressure, or cholesterol control, and only 14% meet targets for all three measures and nonsmoking status (2).

#### Chronic Care Model

The CCM has been shown to be effective for improving the quality of

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**TABLE 1. ADA Evidence Grading System for “Standards of Medical Care in Diabetes”**

Level of evidence	Description
<b>A</b>	Clear evidence from well-conducted, generalizable randomized controlled trials that are adequately powered
<b>B</b>	Supportive evidence from well-conducted cohort studies
<b>C</b>	Supportive evidence from poorly controlled or uncontrolled studies Conflicting evidence with the weight of evidence supporting the recommendation
<b>E</b>	Expert consensus or clinical experience

For additional information, please refer to the complete 2015 Standards (1).

diabetes care (3). Collaborative, multidisciplinary teams are best suited to provide care for people with diabetes and to facilitate patients’ self-management (4–7).

**Key Objectives**

1. Optimize provider and team behavior. The care team should prioritize intensification of lifestyle and/or pharmaceutical therapy for patients with inadequate levels of blood pressure, lipid, or glucose control (8).
2. Support patient behavior change. Successful diabetes care requires a systematic approach to supporting patients’ behavior change efforts. High-quality diabetes self-management education (DSME) and support (DSMS) have been shown to improve patient self-management, satisfaction, and glucose control (9,10).
3. Change the care system. Optimal diabetes management requires an organized, systematic approach and the involvement of a coordinated team of dedicated health care professionals working in an environment where patient-centered high-quality care is a priority (11).

**When Treatment Goals Are Not Met**

When patients are not meeting treatment goals, reassessing the treatment regimen may require evaluation of barriers such as income, health literacy, diabetes-related distress, depression, poverty, and competing

**TABLE 2. Criteria for the Diagnosis of Prediabetes and Diabetes**

	Prediabetes	Diabetes
<b>A1C</b>	5.7–6.4%	≥6.5%
<b>FPG</b>	100–125 mg/dL (5.6–6.9 mmol/L)	≥126 mg/dL (7.0 mmol/L)
<b>OGTT</b>	140–199 mg/dL (7.8–11.0 mmol/L)	≥200 mg/dL (11.1 mmol/L)*
<b>RPG</b>		≥200 mg/dL (11.1 mmol/L)†

\*In the absence of unequivocal hyperglycemia, results should be confirmed by repeat testing.

† Only diagnostic in a patient with classic symptoms of hyperglycemia or hyperglycemic crisis. RPG, random plasma glucose.

demands, including those related to family responsibilities and dynamics.

**CLASSIFICATION AND DIAGNOSIS OF DIABETES**

Diabetes can be classified into the following general categories:

1. Type 1 diabetes (due to β-cell destruction, usually leading to absolute insulin deficiency)
2. Type 2 diabetes (due to a progressive insulin secretory defect on the background of insulin resistance)
3. Gestational diabetes mellitus (GDM) (diabetes diagnosed in the second or third trimester of pregnancy that is not clearly overt diabetes)
4. Specific types of diabetes due to other causes, e.g., monogenic diabetes syndromes (such as neonatal diabetes and maturity-onset diabetes of the young [MODY]), diseases of the exocrine pancreas (such as cystic fibrosis), and drug- or chemical-induced diabetes (such as in the treatment

of HIV/AIDS or after organ transplantation)

**Diagnostic Tests for Diabetes**

Diabetes may be diagnosed based on A1C criteria or plasma glucose criteria, either the fasting plasma glucose (FPG) or the 2-h plasma glucose value after a 75-g oral glucose tolerance test (OGTT) (12,13) (Table 2). The same tests are used to screen for and diagnose diabetes and to detect individuals with prediabetes (Table 3).

**Type 2 Diabetes and Prediabetes**

**Recommendations**

- Testing to detect type 2 diabetes in asymptomatic people should be considered in adults of any age who are overweight or obese (BMI ≥25 kg/m<sup>2</sup> or ≥23 kg/m<sup>2</sup> in Asian Americans) and who have one or more additional risk factors for diabetes. For all patients, particularly those who are overweight or obese, testing should begin at age 45 years. **B**

**TABLE 3. Criteria for Testing for Diabetes or Prediabetes in Asymptomatic Adults**

Testing should be considered in adults who are overweight (BMI  $\geq 25$  kg/m<sup>2</sup> or  $\geq 23$  kg/m<sup>2</sup> in Asian Americans) and have additional risk factors:

- Physical inactivity
- First-degree relative with diabetes
- High-risk race/ethnicity (e.g., African American, Latino, Native American, Asian American, Pacific Islander)
- Women who delivered a baby weighing  $>9$  lb or were diagnosed with GDM
- Hypertension ( $\geq 140/90$  mmHg or on therapy for hypertension)
- HDL cholesterol level  $<35$  mg/dL (0.90 mmol/L) and/or a triglyceride level  $>250$  mg/dL (2.82 mmol/L)
- Women with polycystic ovary syndrome
- A1C  $\geq 5.7\%$ , IGT, or IFG on previous testing
- Other clinical conditions associated with insulin resistance (e.g., severe obesity, acanthosis nigricans)
- History of CVD

**TABLE 4. Testing for Type 2 Diabetes or Prediabetes in Asymptomatic Children ( $\leq 18$  Years of Age)****Criteria**

- Overweight (BMI  $>85$ th percentile for age and sex, weight for height  $>85$ th percentile, or weight  $>120\%$  of ideal for height)

**Plus any two of the following risk factors:**

- Family history of type 2 diabetes in first- or second-degree relative
- Race/ethnicity (Native American, African American, Latino, Asian American, Pacific Islander)
- Signs of insulin resistance or conditions associated with insulin resistance (acanthosis nigricans, hypertension, dyslipidemia, polycystic ovary syndrome, or small-for-gestational-age birth weight)
- Maternal history of diabetes or GDM during the child's gestation

**Age of initiation:** Age 10 years or at onset of puberty, if puberty occurs at a younger age

**Frequency:** Every 3 years

- If tests are normal, repeat testing carried out at a minimum of 3-year intervals is reasonable. **C**
- In patients with prediabetes or diabetes, identify and, if appropriate, treat other CVD risk factors. **B**
- Testing to detect prediabetes and type 2 diabetes should be considered in children and adolescents who are overweight or obese and who have two or more additional risk factors for diabetes. **E**

The modified recommendations of the ADA consensus report "Type 2 Diabetes in Children and Adolescents" (14) are summarized in **Table 4**.

**Gestational Diabetes Mellitus****Recommendations**

- Test for undiagnosed type 2 diabetes at the first prenatal visit in

those with risk factors, using standard diagnostic criteria. **B**

- Test for GDM at 24–28 weeks of gestation in pregnant women not previously known to have diabetes. **A**
- Screen women with GDM for persistent diabetes at 6–12 weeks postpartum, using the OGTT and clinically appropriate nonpregnancy diagnostic criteria. **E**
- Women with a history of GDM should have lifelong screening for the development of diabetes or prediabetes at least every 3 years. **B**
- Women with a history of GDM found to have prediabetes should receive lifestyle interventions or metformin to prevent diabetes. **A**

**INITIAL EVALUATION AND DIABETES MANAGEMENT PLANNING****Medical Evaluation**

A complete medical evaluation should be performed at the initial visit to:

1. Classify diabetes
2. Detect diabetes complications
3. Review previous treatment and risk factor control in patients with diabetes
4. Assist in formulating a management plan
5. Provide a basis for continuing care

Laboratory tests appropriate to the evaluation of each patient's medical condition should be completed. A focus on the components of comprehensive care (**Table 5**) will enable the health care team to optimally manage the patient with diabetes.

**Management Plan**

People with diabetes should receive medical care from a collaborative, integrated team with expertise in diabe-

**TABLE 5. Components of the Comprehensive Diabetes Evaluation**

**Medical history**

- Age and characteristics of onset of diabetes (e.g., diabetic ketoacidosis, asymptomatic laboratory finding)
- Eating patterns, physical activity habits, nutritional status, and weight history; growth and development in children and adolescents
- Presence of common comorbidities, psychosocial problems, and dental disease
- Diabetes education history
- Review of previous treatment regimens and response to therapy (A1C records)
- Current treatment of diabetes, including medications, medication adherence and barriers thereto, meal plan, physical activity patterns, and readiness for behavior change
- Results of glucose monitoring and patient’s use of data
- Diabetic ketoacidosis frequency, severity, and cause
- Hypoglycemic episodes
  - Hypoglycemia awareness
  - Any severe hypoglycemia: frequency and cause
- History of diabetes-related complications
  - Microvascular: retinopathy, nephropathy, neuropathy (sensory, including history of foot lesions; autonomic, including sexual dysfunction and gastroparesis)
  - Macrovascular: coronary heart disease, cerebrovascular disease, and peripheral arterial disease

**Physical examination**

- Height, weight, BMI
- Blood pressure determination, including orthostatic measurements when indicated
- Fundoscopic examination
- Thyroid palpation
- Skin examination (for acanthosis nigricans and insulin injection sites)
- Comprehensive foot examination
  - Inspection
  - Palpation of dorsalis pedis and posterior tibial pulses
  - Presence/absence of patellar and Achilles reflexes
  - Determination of proprioception, vibration, and monofilament sensation

**Laboratory evaluation**

- A1C, if results not available within past 3 months
- If not performed/available within past year
  - Fasting lipid profile, including total, LDL, and HDL cholesterol and triglycerides, as needed
  - Liver function tests
  - Test for urine albumin excretion with spot urine albumin-to-creatinine ratio
  - Serum creatinine and calculated glomerular filtration rate
  - TSH in type 1 diabetes, dyslipidemia, or women over age 50 years

**Referrals**

- Eye care professional for annual dilated eye exam
- Family planning for women of reproductive age
- Registered dietitian for medical nutrition therapy
- DSME/DSMS
- Dentist for comprehensive periodontal examination
- Mental health professional, if needed