

TABLE 418-1 GUIDELINES FOR ONGOING, COMPREHENSIVE MEDICAL CARE FOR PATIENTS WITH DIABETES

- Optimal and individualized glycemic control
- Self-monitoring of blood glucose (individualized frequency)
- HbA_{1c} testing (2–4 times/year)
- Patient education in diabetes management (annual); diabetes-self management education and support
- Medical nutrition therapy and education (annual)
- Eye examination (annual or biannual; **Chap. 419**)
- Foot examination (1–2 times/year by physician; daily by patient; **Chap. 419**)
- Screening for diabetic nephropathy (annual; **Chap. 419**)
- Blood pressure measurement (quarterly)
- Lipid profile and serum creatinine (estimate GFR) (annual; **Chap. 419**)
- Influenza/pneumococcal/hepatitis B immunizations
- Consider antiplatelet therapy (**Chap. 419**)

Abbreviations: GFR, glomerular filtration rate; HbA_{1c}, hemoglobin A_{1c}.

for this comprehensive level of diabetes care. The treatment goals for patients with diabetes are summarized in **Table 418-2** and should be individualized.

DETECTION AND PREVENTION OF COMPLICATIONS RELATED TO DIABETES

The morbidity and mortality rates of DM-related complications (**Chap. 419**) can be greatly reduced by timely and consistent surveillance procedures (**Table 418-1**). These screening procedures are indicated for all individuals with DM, but many individuals with diabetes do not receive comprehensive diabetes care. A comprehensive eye examination should be performed by a qualified optometrist or ophthalmologist. Because many individuals with type 2 DM have had asymptomatic diabetes for several years before diagnosis, the American Diabetes Association (ADA) recommends the following ophthalmologic examination schedule: (1) individuals with type 1 DM should have an initial eye examination within 5 years of diagnosis, (2) individuals with type 2 DM should have an initial eye examination at the time of diabetes diagnosis, (3) women with DM who are pregnant or contemplating pregnancy should have an eye examination prior to conception and during the first trimester, and (4) if eye exam is normal, repeat examination in 2–3 years is appropriate.

TABLE 418-2 TREATMENT GOALS FOR ADULTS WITH DIABETES^a

Index	Goal
Glycemic control ^b	
HbA _{1c}	<7.0% ^c
Preprandial capillary plasma glucose	4.4–7.2 mmol/L (80–130 mg/dL)
Peak postprandial capillary plasma glucose ^d	<10.0 mmol/L (<180 mg/dL)
Blood pressure	<140/90 mmHg ^e
Lipids ^f	
Low-density lipoprotein	<2.6 mmol/L (100 mg/dL) ^g
High-density lipoprotein	>1 mmol/L (40 mg/dL) in men >1.3 mmol/L (50 mg/dL) in women
Triglycerides	<1.7 mmol/L (150 mg/dL)

^aAs recommended by the American Diabetes Association; goals should be individualized for each patient (see text). Goals may be different for certain patient populations. ^bHbA_{1c} is primary goal. ^cDiabetes Control and Complications Trial–based assay. ^d1–2 h after beginning of a meal. ^eGoal of <130/80 mmHg may be appropriate for younger individuals. ^fIn decreasing order of priority. Recent guidelines from the American College of Cardiology and American Heart Association no longer advocate specific LDL and HDL goals (see **Chaps. 291e and 419**). ^gGoal of <1.8 mmol/L (70 mg/dL) may be appropriate for individuals with cardiovascular disease.

Abbreviation: HbA_{1c}, hemoglobin A_{1c}.

Source: Adapted from American Diabetes Association: *Diabetes Care* 38(Suppl 1):S1, 2015.

PATIENT EDUCATION ABOUT DM, NUTRITION, AND EXERCISE

The patient with type 1 or type 2 DM should receive education about nutrition, exercise, care of diabetes during illness, and medications to lower the plasma glucose. Along with improved compliance, patient education allows individuals with DM to assume greater responsibility for their care. Patient education should be viewed as a continuing process with regular visits for reinforcement; it should not be a process that is completed after one or two visits to a nurse educator or nutritionist. The ADA refers to education about the individualized management plan for the patient as diabetes self-management education (DSME) and diabetes self-management support (DSMS). DSME and DSMS are ways to improve the patient's knowledge, skills, and abilities necessary for diabetes self-care and should also emphasize psychosocial issues and emotional well-being. More frequent contact between the patient and the diabetes management team (e.g., electronic, telephone) improves glycemic control.

Diabetes Education The diabetes educator is a health care professional (nurse, dietician, or pharmacist) with specialized patient education skills who is certified in diabetes education (e.g., American Association of Diabetes Educators). Education topics important for optimal diabetes care include self-monitoring of blood glucose; urine ketone monitoring (type 1 DM); insulin administration; guidelines for diabetes management during illnesses; prevention and management of hypoglycemia (**Chap. 420**); foot and skin care; diabetes management before, during, and after exercise; and risk factor–modifying activities.

Psychosocial Aspects Because the individual with DM can face challenges that affect many aspects of daily life, psychosocial assessment and treatment are a critical part of providing comprehensive diabetes care. The individual with DM must accept that he or she may develop complications related to DM. Even with considerable effort, normoglycemia can be an elusive goal, and solutions to worsening glycemic control may not be easily identifiable. The patient should view him- or herself as an essential member of the diabetes care team and not as someone who is cared for by the diabetes management team. Emotional stress may provoke a change in behavior so that individuals no longer adhere to a dietary, exercise, or therapeutic regimen. This can lead to the appearance of either hyper- or hypoglycemia. Eating disorders, including binge eating disorders, bulimia, and anorexia nervosa, appear to occur more frequently in individuals with type 1 or type 2 DM.

Nutrition *Medical nutrition therapy* (MNT) is a term used by the ADA to describe the optimal coordination of caloric intake with other aspects of diabetes therapy (insulin, exercise, weight loss). Primary prevention measures of MNT are directed at preventing or delaying the onset of type 2 DM in high-risk individuals (obese or with prediabetes) by promoting weight reduction. Medical treatment of obesity is a rapidly evolving area and is discussed in **Chap. 416**. Secondary prevention measures of MNT are directed at preventing or delaying diabetes-related complications in diabetic individuals by improving glycemic control. Tertiary prevention measures of MNT are directed at managing diabetes-related complications (cardiovascular disease, nephropathy) in diabetic individuals. MNT in patients with diabetes and cardiovascular disease should incorporate dietary principles used in nondiabetic patients with cardiovascular disease. Although the recommendations for all three types of MNT overlap, this chapter emphasizes secondary prevention measures of MNT. Pharmacologic approaches that facilitate weight loss and bariatric surgery should be considered in selected patients (**Chaps. 415e and 416**).

In general, the components of optimal MNT are similar for individuals with type 1 or type 2 DM and similar to those for the general population (fruits, vegetables, fiber-containing foods, and low fat; **Table 418-3**). MNT education is an important component of comprehensive diabetes care and should be reinforced by regular patient education. Historically, nutrition education imposed restrictive, complicated regimens on the patient. Current practices have greatly changed, although many patients and health care providers still view the diabetic diet as monolithic and static. For example, MNT now includes foods