



American Diabetes Association

3. Comprehensive Medical Evaluation and Assessment of Comorbidities

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PATIENT-CENTERED COLLABORATIVE CARE

Recommendation

- A patient-centered communication style that uses active listening, elicits patient preferences and beliefs, and assesses literacy, numeracy, and potential barriers to care should be used to optimize patient health outcomes and health-related quality of life. **B**

A successful medical evaluation depends on beneficial interactions between the patient and the care team. The Chronic Care Model (1–3) (see Section 1 “Promoting Health and Reducing Disparities in Populations”) is a patient-centered approach to care that requires a close working relationship between the patient and clinicians involved in treatment planning. People with diabetes should receive health care from a team that may include physicians, nurse practitioners, physician assistants, nurses, dietitians, exercise specialists, pharmacists, dentists, podiatrists, and mental health professionals. Individuals with diabetes must assume an active role in their care. The patient, family or support persons, physician, and health care team should formulate the management plan, which includes lifestyle management (see Section 4 “Lifestyle Management”).

Treatment goals and plans should be created with the patients based on their individual preferences, values, and goals. The management plan should take into account the patient’s age, cognitive abilities, school/work schedule and conditions, health beliefs, support systems, eating patterns, physical activity, social situation, financial concerns, cultural factors, literacy and numeracy (mathematical literacy) skills, diabetes complications, comorbidities, health priorities, other medical conditions, preferences for care, and life expectancy. Various strategies and techniques should be used to support patients’ self-management efforts, including providing education on problem-solving skills for all aspects of diabetes management.

Provider communications with patients/families should acknowledge that multiple factors impact glycemic management, but also emphasize that collaboratively developed treatment plans and a healthy lifestyle can significantly improve disease outcomes and well-being (4–7). Thus, the goal of provider-patient communication is to establish a collaborative relationship and to assess and address self-management barriers without blaming patients for “noncompliance” or “nonadherence” when the outcomes of self-management are not optimal (8). The familiar terms “noncompliance” and “nonadherence” denote a passive, obedient role for a person with diabetes in “following doctor’s orders” that is at odds with the active role people with diabetes take in directing the day-to-day decision making, planning, monitoring, evaluation, and problem-solving involved in diabetes self-management. Using a nonjudgmental approach that normalizes periodic lapses in self-management may help minimize patients’ resistance to reporting problems with self-management. Empathizing and using active listening techniques, such as open-ended questions, reflective statements, and summarizing what the patient said can help facilitate communication. Patients’ perceptions about their own ability, or self-efficacy, to self-manage diabetes are one important psychosocial factor related to improved diabetes self-management and treatment outcomes in diabetes

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(9–13) and should be a target of ongoing assessment, patient education, and treatment planning.

COMPREHENSIVE MEDICAL EVALUATION

Recommendations

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

- Confirm the diagnosis and classify diabetes. **B**
- Detect diabetes complications and potential comorbid conditions. **E**
- Review previous treatment and risk factor control in patients with established diabetes. **E**
- Begin patient engagement in the formulation of a care management plan. **B**
- Develop a plan for continuing care. **B**

The comprehensive medical evaluation (Table 3.1) includes the initial and ongoing evaluations, assessment of complications, psychosocial assessment, management of comorbid conditions, and engagement of the patient throughout the process. The goal is to provide the health care team information to optimally support a patient. In addition to the medical history, physical examination, and laboratory tests, providers should assess diabetes self-management behaviors, nutrition, and psychosocial health (see Section 4 “Lifestyle Management”) and give guidance on routine immunizations. Consider the assessment of sleep pattern and duration; a recent meta-analysis found that poor sleep quality, short sleep, and long sleep were associated with higher A1C in people with type 2 diabetes (14).

Lifestyle management and psychosocial care are the cornerstones of diabetes management. Patients should be referred for diabetes self-management education (DSME), diabetes self-management support (DSMS), medical nutrition therapy (MNT), and psychosocial/emotional health concerns if indicated. Patients should receive recommended preventive care services (e.g., immunizations, cancer screening, etc.); smoking cessation counseling; and ophthalmological, dental, and podiatric referrals. Additional referrals should be arranged as necessary (Table 3.2). Clinicians should ensure that individuals with diabetes are appropriately screened for complications and comorbidities. Discussing

and implementing an approach to glycemic control with the patient is a part, not the sole goal, of care.

Immunization

Recommendations

- Provide routine vaccinations for children and adults with diabetes according to age-related recommendations. **C**
- Annual vaccination against influenza is recommended for all persons with diabetes ≥ 6 months of age. **C**
- Vaccination against pneumonia is recommended for all people with diabetes 2 through 64 years of age with pneumococcal polysaccharide vaccine (PPSV23). At age ≥ 65 years, administer the pneumococcal conjugate vaccine (PCV13) at least 1 year after vaccination with PPSV23, followed by another dose of vaccine PPSV23 at least 1 year after PCV13 and at least 5 years after the last dose of PPSV23. **C**
- Administer 3-dose series of hepatitis B vaccine to unvaccinated adults with diabetes who are age 19–59 years. **C**
- Consider administering 3-dose series of hepatitis B vaccine to unvaccinated adults with diabetes who are age ≥ 60 years. **C**

As for the general population, all children and adults with diabetes should receive vaccinations (15,16) according to age-specific recommendations. The child and adolescent vaccination schedule is available at <http://www.cdc.gov/vaccines/schedules/hcp/imz/child-adolescent.html>, and the adult vaccination schedule is available at <http://www.cdc.gov/vaccines/schedules/hcp/imz/adult.html>.

The Centers for Disease Control and Prevention (CDC) Advisory Committee on Immunization Practices (ACIP) recommends influenza and pneumococcal vaccines for individuals with diabetes (<http://www.cdc.gov/vaccines/schedules>).

Influenza

Influenza is a common, preventable infectious disease associated with high mortality and morbidity in vulnerable populations including the young and the elderly and people with chronic diseases. In a case-control study, the influenza vaccine was found to reduce diabetes-related hospital admission by as much as 79% during flu epidemics (17).

Pneumococcal Pneumonia

Like influenza, pneumococcal pneumonia is a common, preventable disease. People with diabetes may be at increased risk for the bacteremic form of pneumococcal infection and have been reported to have a high risk of nosocomial bacteremia, with a mortality rate as high as 50% (18). All patients with diabetes 2 years of age and older should receive the pneumococcal polysaccharide vaccine (PPSV23). There is sufficient evidence to support that adults with diabetes < 65 years of age have appropriate serologic and clinical responses to these vaccinations (19). The American Diabetes Association (ADA) endorses recommendations from the CDC ACIP that all adults 65 years of age or older receive a dose of pneumococcal conjugate vaccine (PCV13) followed by a dose of PPSV23 at least 1 year later (and at least 5 years after their previous PPSV23 dose).

Hepatitis B

Compared with the general population, people with type 1 or type 2 diabetes have higher rates of hepatitis B. This may be due to contact with infected blood or through improper equipment use (glucose monitoring devices or infected needles). Because of the higher likelihood of transmission, hepatitis B vaccine is recommended for adults with diabetes.

ASSESSMENT OF COMORBIDITIES

Besides assessing diabetes-related complications, clinicians and their patients need to be aware of common comorbidities that affect people with diabetes and may complicate management (20–24). Diabetes comorbidities are conditions that affect people with diabetes more often than age-matched people without diabetes. The list below includes many of the common comorbidities observed in patients with diabetes but is not necessarily inclusive of all the conditions that have been reported.

Autoimmune Diseases

Recommendation

- Consider screening patients with type 1 diabetes for autoimmune thyroid disease and celiac disease soon after diagnosis. **E**

People with type 1 diabetes are at increased risk for other autoimmune diseases including thyroid disease, primary adrenal insufficiency, celiac disease, autoimmune gastritis, autoimmune hepatitis, dermatomyositis, and myasthenia gravis

Table 3.1—Components of the comprehensive diabetes medical evaluation*

Medical history

- Age and characteristics of onset of diabetes (e.g., diabetic ketoacidosis, asymptomatic laboratory finding)
- Eating patterns, nutritional status, weight history, sleep behaviors (pattern and duration), and physical activity habits; nutrition education and behavioral support history and needs
- Complementary and alternative medicine use
- Presence of common comorbidities and dental disease
- Screen for depression, anxiety, and disordered eating using validated and appropriate measures**
- Screen for diabetes distress using validated and appropriate measures**
- Screen for psychosocial problems and other barriers to diabetes self-management, such as limited financial, logistical, and support resources
- History of tobacco use, alcohol consumption, and substance use
- Diabetes education, self-management, and support history and needs
- Review of previous treatment regimens and response to therapy (A1C records)
- Assess medication-taking behaviors and barriers to medication adherence
- Results of glucose monitoring and patient’s use of data
- Diabetic ketoacidosis frequency, severity, and cause
- Hypoglycemia episodes, awareness, and frequency and causes
- History of increased blood pressure, abnormal lipids
- Microvascular complications: retinopathy, nephropathy, and neuropathy (sensory, including history of foot lesions; autonomic, including sexual dysfunction and gastroparesis)
- Macrovascular complications: coronary heart disease, cerebrovascular disease, and peripheral arterial disease
- For women with childbearing capacity, review contraception and preconception planning

Physical examination

- Height, weight, and BMI; growth and pubertal development in children and adolescents
- Blood pressure determination, including orthostatic measurements when indicated
- Fundoscopic examination
- Thyroid palpation
- Skin examination (e.g., for acanthosis nigricans, insulin injection or infusion set insertion 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 the results are not available within the past 3 months
- If not performed/available within the past year
 - Fasting lipid profile, including total, LDL, and HDL cholesterol and triglycerides, as needed
 - Liver function tests
 - Spot urinary albumin-to-creatinine ratio
 - Serum creatinine and estimated glomerular filtration rate
 - Thyroid-stimulating hormone in patients with type 1 diabetes

*The comprehensive medical evaluation should ideally be done on the initial visit, although different components can be done as appropriate on follow-up visits.

**Refer to the ADA position statement “Psychosocial Care for People With Diabetes” for additional details on diabetes-specific screening measures (65).

(25,26). Type 1 diabetes may also occur with other autoimmune diseases in the context of specific genetic disorders or polyglandular autoimmune syndromes (27). In autoimmune diseases, the immune system fails to maintain self-tolerance to specific peptides within target organs. It is likely that many factors trigger autoimmune disease; however, common triggering factors are known for only some autoimmune conditions (i.e., gliadin peptides in celiac disease) (see Section 12 “Children and Adolescents”).

Cancer

Diabetes is associated with increased risk of cancers of the liver, pancreas, endometrium, colon/rectum, breast, and bladder (28). The association may result from

shared risk factors between type 2 diabetes and cancer (older age, obesity, and physical inactivity) but may also be due to diabetes-related factors (29), such as underlying disease physiology or diabetes treatments, although evidence for these links is scarce. Patients with diabetes should be encouraged to undergo recommended age- and sex-appropriate cancer screenings and to reduce their modifiable cancer risk factors (obesity, physical inactivity, and smoking).

Cognitive Impairment/Dementia

Recommendation

- In people with cognitive impairment/dementia, intensive glucose control cannot be expected to remediate deficits. Treatment should

be tailored to avoid significant hypoglycemia. **B**

Diabetes is associated with a significantly increased risk and rate of cognitive decline and an increased risk of

Table 3.2—Referrals for initial care management

- Eye care professional for annual dilated eye exam
- Family planning for women of reproductive age
- Registered dietitian for MNT
- DSME/DSMS
- Dentist for comprehensive dental and periodontal examination
- Mental health professional, if indicated

dementia (30,31). A recent meta-analysis of prospective observational studies in people with diabetes showed a 73% increased risk of all types of dementia, a 56% increased risk of Alzheimer dementia, and 127% increased risk of vascular dementia compared with individuals without diabetes (32). The reverse is also true: people with Alzheimer dementia are more likely to develop diabetes than people without Alzheimer dementia. In a 15-year prospective study of community-dwelling people >60 years of age, the presence of diabetes at baseline significantly increased the age- and sex-adjusted incidence of all-cause dementia, Alzheimer disease, and vascular dementia compared with rates in those with normal glucose tolerance (33).

Hyperglycemia

In those with type 2 diabetes, the degree and duration of hyperglycemia are related to dementia. More rapid cognitive decline is associated with both increased A1C and longer duration of diabetes (34). The Action to Control Cardiovascular Risk in Diabetes (ACCORD) study found that each 1% higher A1C level was associated with lower cognitive function in individuals with type 2 diabetes (35). However, the ACCORD study found no difference in cognitive outcomes in participants randomly assigned to intensive and standard glycemic control, supporting the recommendation that intensive glucose control should not be advised for the improvement of cognitive function in individuals with type 2 diabetes (36).

Hypoglycemia

In type 2 diabetes, severe hypoglycemia is associated with reduced cognitive function, and those with poor cognitive function have more severe hypoglycemia. In a long-term study of older patients with type 2 diabetes, individuals with one or more recorded episode of severe hypoglycemia had a stepwise increase in risk of dementia (37). Likewise, the ACCORD trial found that as cognitive function decreased, the risk of severe hypoglycemia increased (38). Tailoring glycemic therapy may help to prevent hypoglycemia in individuals with cognitive dysfunction.

Nutrition

In one study, adherence to the Mediterranean diet correlated with improved cognitive function (39). However, a recent

Cochrane review found insufficient evidence to recommend any dietary change for the prevention or treatment of cognitive dysfunction (40).

Statins

A systematic review has reported that data do not support an adverse effect of statins on cognition (41). The U.S. Food and Drug Administration (FDA) postmarketing surveillance databases have also revealed a low reporting rate for cognitive-related adverse events, including cognitive dysfunction or dementia, with statin therapy, similar to rates seen with other commonly prescribed cardiovascular medications (41). Therefore fear of cognitive decline should not be a barrier to statin use in individuals with diabetes and a high risk for cardiovascular disease.

Fatty Liver Disease

Elevations of hepatic transaminase concentrations are associated with higher BMI, waist circumference, and triglyceride levels and lower HDL cholesterol levels. In a prospective analysis, diabetes was significantly associated with incident nonalcoholic chronic liver disease and with hepatocellular carcinoma (42). Interventions that improve metabolic abnormalities in patients with diabetes (weight loss, glycemic control, and treatment with specific drugs for hyperglycemia or dyslipidemia) are also beneficial for fatty liver disease (43,44).

Fractures

Age-specific hip fracture risk is significantly increased in people with both type 1 (relative risk 6.3) and type 2 (relative risk 1.7) diabetes in both sexes (45). Type 1 diabetes is associated with osteoporosis, but in type 2 diabetes, an increased risk of hip fracture is seen despite higher bone mineral density (BMD) (46). In three large observational studies of older adults, femoral neck BMD T score and the World Health Organization Fracture Risk Assessment Tool (FRAX) score were associated with hip and nonspine fractures. Fracture risk was higher in participants with diabetes compared with those without diabetes for a given T score and age for a given FRAX score (47). Providers should assess fracture history and risk factors in older patients with diabetes and recommend measurement of BMD if appropriate for the patient's age and sex. Fracture prevention strategies for people with diabetes are the same as for the

general population and include vitamin D supplementation. For patients with type 2 diabetes with fracture risk factors, thiazolidinediones (48) and sodium-glucose cotransporter 2 inhibitors (49) should be used with caution.

Hearing Impairment

Hearing impairment, both in high-frequency and low/mid-frequency ranges, is more common in people with diabetes than in those without, perhaps due to neuropathy and/or vascular disease. In a National Health and Nutrition Examination Survey (NHANES) analysis, hearing impairment was about twice as prevalent in people with diabetes compared with those without, after adjusting for age and other risk factors for hearing impairment (50).

HIV

Recommendation

- Patients with HIV should be screened for diabetes and prediabetes with a fasting glucose level every 6–12 months before starting antiretroviral therapy and 3 months after starting or changing antiretroviral therapy. If initial screening results are normal, checking fasting glucose every year is advised. If prediabetes is detected, continue to measure fasting glucose levels every 3–6 months to monitor for progression to diabetes. **E**

Diabetes risk is increased with certain protease inhibitors (PIs) and nucleoside reverse transcriptase inhibitors (NRTIs). New-onset diabetes is estimated to occur in more than 5% of patients infected with HIV on PIs, whereas more than 15% may have prediabetes (51). PIs are associated with insulin resistance and may also lead to apoptosis of pancreatic β -cells. NRTIs also affect fat distribution (both lipohypertrophy and lipoatrophy), which is associated with insulin resistance.

Individuals with HIV are at higher risk for developing prediabetes and diabetes on antiretroviral (ARV) therapies, so a screening protocol is recommended (52). The A1C test underestimates glycemia in people with HIV and is not recommended for diagnosis and may present challenges for monitoring (53). In those with prediabetes, weight loss through healthy nutrition and physical activity may reduce the progression toward diabetes. Among patients with HIV and diabetes,

preventive health care using an approach similar to that used in patients without HIV is critical to reduce the risks of microvascular and macrovascular complications.

For patients with HIV and ARV-associated hyperglycemia, it may be appropriate to consider discontinuing the problematic ARV agents if safe and effective alternatives are available (54). Before making ARV substitutions, carefully consider the possible effect on HIV virological control and the potential adverse effects of new ARV agents. In some cases, antihyperglycemic agents may still be necessary.

Low Testosterone in Men

Mean levels of testosterone are lower in men with diabetes compared with age-matched men without diabetes, but obesity is a major confounder (55). Treatment in asymptomatic men is controversial. The evidence that testosterone replacement affects outcomes is mixed, and recent guidelines do not recommend testing or treating men without symptoms (56).

Obstructive Sleep Apnea

Age-adjusted rates of obstructive sleep apnea, a risk factor for cardiovascular disease, are significantly higher (4- to 10-fold) with obesity, especially with central obesity (57). The prevalence of obstructive sleep apnea in the population with type 2 diabetes may be as high as 23%, and the prevalence of any sleep-disordered breathing may be as high as 58% (58,59). In obese participants enrolled in the Action for Health in Diabetes (Look AHEAD) trial, it exceeded 80% (60). Sleep apnea treatment (lifestyle modification, continuous positive airway pressure, oral appliances, and surgery) significantly improves quality of life and blood pressure control. The evidence for a treatment effect on glycemic control is mixed (61).

Periodontal Disease

Periodontal disease is more severe, and may be more prevalent, in patients with diabetes than in those without (62,63). Current evidence suggests that periodontal disease adversely affects diabetes outcomes, although evidence for treatment benefits remains controversial (24).

Psychosocial/Emotional Disorders

Prevalence of clinically significant psychopathology in people with diabetes ranges across diagnostic categories, and some

diagnoses are considerably more common in people with diabetes than for those without the disease (64). Symptoms, both clinical and subclinical, that interfere with the person's ability to carry out diabetes self-management must be addressed. Diabetes distress is addressed in Section 4 "Lifestyle Management," as this state is very common and distinct from a psychological disorder (65).

Anxiety Disorders

Recommendations

- Consider screening for anxiety in people exhibiting anxiety or worries regarding diabetes complications, insulin injections or infusion, taking medications, and/or hypoglycemia that interfere with self-management behaviors and those who express fear, dread, or irrational thoughts and/or show anxiety symptoms such as avoidance behaviors, excessive repetitive behaviors, or social withdrawal. Refer for treatment if anxiety is present. **B**
- People with hypoglycemia unawareness, which can co-occur with fear of hypoglycemia, should be treated using blood glucose awareness training (or other evidence-based similar intervention) to help re-establish awareness of hypoglycemia and reduce fear of hypoglycemia. **A**

Anxiety symptoms and diagnosable disorders (e.g., generalized anxiety disorder, body dysmorphic disorder, obsessive-compulsive disorder, specific phobias, and posttraumatic stress disorder) are common in people with diabetes (66). The Behavioral Risk Factor Surveillance System (BRFSS) estimated the lifetime prevalence of generalized anxiety disorder to be 19.5% in people with either type 1 or type 2 diabetes (67). Common diabetes-specific concerns include fears related to hyperglycemia (68,69), not meeting blood glucose targets (66), and insulin injections or infusion (70). Onset of complications presents another critical point when anxiety can occur (71). People with diabetes who exhibit excessive diabetes self-management behaviors well beyond what is prescribed or needed to achieve glycemic targets may be experiencing symptoms of obsessive-compulsive disorder (72).

General anxiety is a predictor of injection-related anxiety and associated with fear of hypoglycemia (69,73). Fear of hypoglycemia and hypoglycemia unawareness often co-occur, and interventions aimed at treating one often benefit both (74). Fear of hypoglycemia may explain avoidance of behaviors associated with lowering glucose such as increasing insulin doses or frequency of monitoring. If fear of hypoglycemia is identified and a person does not have symptoms of hypoglycemia, a structured program, blood glucose awareness training, delivered in routine clinical practice, can improve A1C, reduce the rate of severe hypoglycemia, and restore hypoglycemia awareness (75,76).

Depression

Recommendations

- Providers should consider annual screening of all patients with diabetes, especially those with a self-reported history of depression, for depressive symptoms with age-appropriate depression screening measures, recognizing that further evaluation will be necessary for individuals who have a positive screen. **B**
- Beginning at diagnosis of complications or when there are significant changes in medical status, consider assessment for depression. **B**
- Referrals for treatment of depression should be made to mental health providers with experience using cognitive behavioral therapy, interpersonal therapy, or other evidence-based treatment approaches in conjunction with collaborative care with the patient's diabetes treatment team. **A**

History of depression, current depression, and antidepressant medication use are risk factors for the development of type 2 diabetes, especially if the individual has other risk factors such as obesity and family history of type 2 diabetes (77–79). Elevated depressive symptoms and depressive disorders affect one in four patients with type 1 or type 2 diabetes (80). Thus, routine screening for depressive symptoms is indicated in this high-risk population including people with prediabetes (particularly those who are overweight), type 1 or type 2 diabetes, gestational diabetes mellitus and

postpartum diabetes. Regardless of diabetes type, women have significantly higher rates of depression than men (81).

Routine monitoring with patient-appropriate validated measures can help to identify if referral is warranted. Remission of depressive symptoms or disorder in adult patients suggests the need for ongoing monitoring of depression recurrence within the context of routine care (77). Integrating mental and physical health care can improve outcomes. When a patient is in psychological therapy (talk therapy), the mental health provider should be incorporated into the diabetes treatment team (82).

Disordered Eating Behavior

Recommendations

- Providers should consider reevaluating the treatment regimen of people with diabetes who present with symptoms of disordered eating behavior, an eating disorder, or disrupted patterns of eating. **B**
- Consider screening for disordered or disrupted eating using validated screening measures when hyperglycemia and weight loss are unexplained based on self-reported behaviors related to medication dosing, meal plan, and physical activity. In addition, a review of the medical regimen is recommended to identify potential treatment-related effects on hunger/caloric intake. **B**

Estimated prevalence of disordered eating behaviors and diagnosable eating disorders in people with diabetes varies (83–85). For people with type 1 diabetes, insulin omission causing glycosuria in order to lose weight is the most commonly reported disordered eating behavior (86,87); in people with type 2 diabetes, bingeing (excessive food intake with an accompanying sense of loss of control) is most commonly reported. For people with type 2 diabetes treated with insulin, intentional omission is also frequently reported (88). People with diabetes and diagnosable eating disorders have high rates of comorbid psychiatric disorders (89). People with type 1 diabetes and eating disorders have high rates of diabetes distress and fear of hypoglycemia (90).

When evaluating symptoms of disordered or disrupted eating in people with diabetes, etiology and motivation for the behavior should be considered (85,91). Adjunctive medication such as glucagon-like peptide 1 receptor agonists (92) may help individuals to not only meet glycemic targets but also to regulate hunger and food intake, thus having the potential to reduce uncontrollable hunger and bulimic symptoms.

Serious Mental Illness

Recommendations

- Annually screen people who are prescribed atypical antipsychotic medications for prediabetes or diabetes. **B**
- If a second-generation antipsychotic medication is prescribed for adolescents or adults with diabetes, changes in weight, glycemic control, and cholesterol levels should be carefully monitored and the treatment regimen should be reassessed. **C**
- Incorporate monitoring of diabetes self-care activities into treatment goals in people with diabetes and serious mental illness. **B**

Studies of individuals with serious mental illness, particularly schizophrenia and other thought disorders, show significantly increased rates of type 2 diabetes (93). People with schizophrenia should be monitored for type 2 diabetes because of the known comorbidity. Disordered thinking and judgment can be expected to make it difficult to engage in behaviors that reduce risk factors for type 2 diabetes, such as restrained eating for weight management. Coordinated management of diabetes or prediabetes and serious mental illness is recommended to achieve diabetes treatment targets. In addition, those taking second-generation (atypical) antipsychotics such as olanzapine require greater monitoring because of an increase in risk of type 2 diabetes associated with this medication (94).

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