Capital Health PLAN℠

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Diabetes Clinical Practice Guideline

Based on American Diabetes Association Position Statement: Standards of Medical Care in Diabetes - 2023

Approved by CHP Quality Improvement Committee: 9/8/09, 5/10/11, 3/12/13, 3/10/15, 03/14/17, 3/6/18, 3/12/2019, 3/9/2021, 7/11/2023

Standards of Medical Care for Patients with Diabetes Mellitus

Diabetes and Population Health

1. Ensure treatment decisions are timely, rely on evidence-based guidelines, include social community support, and are made collaboratively with patients based on individual preferences, prognoses, comorbidities and informed financial considerations. (Evidence B)

2. Align approaches to diabetes management with the Chronic Care Model. This model emphasizes person-centered team care, integrated long-term treatment approaches to diabetes and comorbidities, and ongoing collaborative communication and goal setting between all team members. (Evidence A)

3. Care systems should facilitate in-person and virtual team-based care, including those knowledgeable and experienced in diabetes management as part of the team, and utilization of patient registries, decision support tools, and community involvement to meet patient needs. (Evidence B)

4. Assess diabetes health care maintenance using reliable and relevant data metrics to improve processes of care and health outcomes, with attention to care costs. (Evidence B)

5. Tailor treatment for the social context:

    a. Access food insecurity, housing insecurity/homelessness, financial barriers, and social capital/social community support to inform treatment decisions, with referral to appropriate local community resources. (Evidence A)

    b. Provide patients with additional self-management support from lay health coaches, navigators, or community health workers when available. (Evidence A)

    c. Consider the involvement of community health workers to support the management of diabetes and cardiovascular risk factors, especially in underserved communities and health care systems. (Evidence B)

Criteria for the Diagnosis of Diabetes

1. A1C $\geq$ 6.5% (48 mmol/mol) with consideration of factors that may impact hemoglobin glycation independently of glycemia such as hemodialysis, pregnancy, HIV, Age, race/ethnicity, pregnancy, genetic background, anemia or hemoglobinopathies, OR

2. Fasting plasma glucose $\geq$126 mg/dL (7.0 mmol/L)

3. 2-hour plasma glucose $\geq$ 200 mg/dl (11.1 mmol/L) during an oral glucose tolerance test, OR

4. Symptoms of hyperglycemia or hyperglycemic crisis and random plasma glucose $\geq$200 mg/dL (11.1 mmol/L)

In the absence of unequivocal hyperglycemia, diagnosis requires two abnormal test results from the same sample or in two separate test samples.

Criteria for Screening for Diabetes and Prediabetes

1. Screening for prediabetes and type 2 diabetes with an informal assessment of risk factors or validated risk calculator should be done in asymptomatic adults. (Evidence B)

2. Testing for prediabetes and/or type 2 diabetes in asymptomatic people should be considered in adults of any age with overweight or obesity (BM I≥25 kg/m² or ≥23 kg/m² in Asian American individuals) who one or more risk factors: (Evidence B)

    a. First-degree relative with diabetes

    b. High-risk race/ethnicity (e.g., African American, Latino, Native American, Asian American, Pacific Islander)

    c. History of CVD

    d. Hypertension (≥130/80 mmHg or on therapy for hypertension)

    e. HDL cholesterol level <35mg/dL (0.90 mmol/L) and/or a triglyceride level >250 mg/dL (2.82 mmol/L)

    f. Individuals with polycystic ovary syndrome

    g. Physical inactivity

    h. Other clinical conditions associated with insulin resistance (e.g., severe obesity, acanthosis nigricans).

3. For all people, screening should begin at age 35 years. (Evidence B)

4. To screen for prediabetes and type 2 diabetes, fasting plasma glucose, 2-h plasma glucose during 75-g oral glucose tolerance test, and A1c are each appropriate. (Evidence B)

5. When using oral glucose tolerance testing as a screen for diabetes, adequate carbohydrate intake (at least 150 g/day) should be assured for 3 days prior to testing. (Evidence A)

6. In people with prediabetes and diabetes, identify and treat cardiovascular disease risk factors. (Evidence A)

7. Risk-based screening for prediabetes and/or type 2 diabetes should be considered after the onset of puberty or after 10 years of age, whichever occurs earlier, in children and adolescents with overweight (BMI ≥85th percentile) or obesity (BMI ≥95th percentile) and who have one or more risk factors for diabetes. (Evidence B)

Prevention or Delay of Type 2 Diabetes

Lifestyle Behavior Change for Diabetes Prevention

1. Refer adults with overweight/obesity at high risk of type 2 diabetes, as typified by the Diabetes Prevention Program (DPP) to an intensive behavioral lifestyle change program to achieve and maintain a weight reduction of at least 7% of initial body weight through healthy reduced-calorie diet and ≥150 min/week of moderate intensity physical activity. (Evidence A)

2. A variety of eating patterns can be considered to prevent diabetes in individuals with prediabetes to include: (Evidence B)

    a. Mediterranean-style

    b. Low carbohydrate eating plans

    c. Vegetarian and/or plant-based plans

    d. DASH (Dietary Approaches to Stop Hypertension)

    e. Minimally refined and processed food as measured by the Healthy Eating Index, Alternative Healthy Eating Index, and DASH score.

3. Given the cost-effectiveness of lifestyle behavior modification programs for diabetes prevention, such diabetes prevention programs should be offered to adults at high risk of type 2 diabetes. (Evidence A)

4. Based on individual preference, certified technology-assisted diabetes prevention programs may be effective in preventing type 2 diabetes and should be considered. (Evidence B)

    Pharmacologic Interventions

    a. Metformin therapy for prevention of type 2 diabetes should be considered in adults at high risk of type 2 diabetes, as typified by the Diabetes Prevention Program, especially those aged 25-59 years with BMI ≥35 kg/m², higher fasting plasma glucose (e.g., ≥110 mg/dL), and higher A1c (e.g., ≥6%), and in individuals with prior gestational diabetes mellitus. (Evidence A)

    b. Long-term use of metformin may be associated with biochemical vitamin B12 levels in metformin-treated individuals, especially in those with anemia or peripheral neuropathy. (Evidence B)

Prevention of Vascular Disease and Mortality

1. Prediabetes is associated with heightened cardiovascular risk; therefore, screening for and treatment of modifiable risk factors for cardiovascular disease are suggested. (Evidence B)

2. Statin therapy may increase the risk of type 2 diabetes in people at high risk of developing type 2 diabetes. In such individuals, glucose status should be monitored regularly and diabetes prevention approaches reinforced. It is not recommended that statins be discontinued. (Evidence B)

3. In people with a history of stroke and evidence of insulin resistance and prediabetes, pioglitazone may be considered to lower the risk of stroke or myocardial infarction. However, this benefit needs to be balanced with the increased risk of weight gain, edema, and fracture. (Evidence A)

Person-Centered Care Goals

1. In adults with overweight/obesity at high risk of type 2 diabetes, care goals should include weight loss or prevention of weight gain, minimizing the progression of hyperglycemia, and attention to cardiovascular risk and associated comorbidities. (Evidence B)

2. Pharmacotherapy (e.g., for weight management, minimizing the progression of hyperglycemia, cardiovascular risk reduction) may be considered to support person-centered care goals. (Evidence B)

3. More intensive preventive approaches should be considered in individuals who are at particularly high risk of progression to diabetes, including individuals with BMI ≥35 kg/m², those at higher glucose levels (e.g., fasting plasma glucose 110-125 mg/dL, 2-h postchallenge glucose 173-199 mg/dL, A1C ≥6.0%), and individuals with a history of gestational diabetes mellitus. (Evidence A)

Comprehensive Medical Evaluation and Assessment of Comorbidities (Evidence B)

1. A person-centered communication style that uses person-centered, culturally sensitive, and strength-based language and active listening; elicits individual preferences and beliefs; and assesses literacy, numeracy, and potential barriers to care should be used to optimize health outcomes and health-related quality of life. (Evidence B)

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

    a. Confirm the diagnosis and classify diabetes (Evidence A)

    b. Evaluate for diabetes complication, potential comorbid condition, and overall health status. (Evidence A)

    c. Review previous treatment and risk factor management in people with established diabetes. (Evidence A)

    d. Begin engagement with the person with diabetes in the formulation of a care management plan including initial goals of care. (Evidence A)

e. Develop a plan for continuing care. (Evidence A)

f. A follow-up visit should include most components of the initial comprehensive medical evaluation. (Evidence A)

g. Ongoing management should be guided by the assessment of overall health status, diabetes complications, cardiovascular risk, hypoglycemia risk, and shared decision-making to set therapeutic goals. (Evidence B)

Components of the comprehensive diabetes medical evaluation at initial, follow-up, and annual visits

Diabetes History

- Characteristics at onset (e.g., age, symptoms)
- Review of previous treatment plans and response
- Access frequency/cause/severity of past hospitalizations

Family History

- Family history of diabetes in a first-degree relative
- Family history of autoimmune disorders

Personal history of complications and common comorbidities

- Common comorbidities (e.g., obesity, OSA, NSFLD)
- High blood pressure or abnormal lipids
- Macrovascular and microvascular complications
- Hypoglycemia: awareness/frequency/causes/timing of episodes
- Presence of hemoglobinopathies or anemias
- Last dental visit
- Last dilated eye exam
- Visits to specialists

Interval history

- Changes in medical/family history since last visit
- Eating patterns and weight history
- Assess familiarity with carbohydrate counting (e.g., type 1 diabetes, type 2 diabetes treated with MDI)
- Physical activity and sleep behaviors
- Tobacco, alcohol, and substance use
- Current medication plan

- Medication-taking behavior
- Medication intolerance or side effects
- Complementary and alternative medication use
- Vaccination history and needs
- Access use of health apps, online education, patient portals, etc.
- Glucose monitoring (meter/CGM): results and data use
- Review insulin pump setting and use, connected pen and glucose data

Social Network

- Identify existing social supports
- Identify surrogate decision maker, advanced care plan
- Identify social determinants of health (e.g., food security, housing stability and homelessness, transportation access, financial security, community safety)

Physical examination

- Height, weight and BMI; growth/pubertal development in children and adolescents
- Blood pressure determination
- Fundoscopic examination (refer to eye specialist)
- Thyroid palpation
- Skin examination (e.g., acanthosis nigricans, insulin injection or insertion sites, lipodystrophy)
- Comprehensive foot examination:
    - Visual Inspection (e.g., skin integrity, callous formation, foot deformity or ulcers, toenails) at every visit in people with diabetes with sensory loss, previous foot ulcer, or amputations.
    - Screen for PAD (pedal pulses – refer for ABI if diminished)
    - Determination of temperature, vibration or pinprick sensation, and 10-g monofilament exam
- Screen for depression, anxiety, and disordered eating
- Consider assessment for cognitive impairment at age 65 or older Consider assessment for functional impairment at age 65 or older

Laboratory evaluation

- A1C, if the results are not available within the past 3 months
- If not performed/available within past year:
    - Lipid profile, including total, LDL and HDL cholesterol and triglycerides

- Liver function tests
- Thyroid-stimulating hormone (TSH) in people with type 1 diabetes
    - Lipid profile, liver function tests, and TSH may also need to be checked after initiation or dose changes of medications that affect these laboratory values (i.e., diabetes medications, blood pressure medications, cholesterol medications, or thyroid medications).
- Spot urine albumin-to-creatinine ratio
- Serum creatinine and estimated glomerular filtration rate
- Serum potassium levels in patients on ACE inhibitors, ARBs, or diuretics
    - Serum creatinine, eGFR, and serum potassium may be needed more frequently in people with diabetes with known chronic kidney disease or with changes in mediations that affect kidney function and serum potassium
- Vitamin B12 if on Metformin

Diabetes and COVID-19

1. Health care professionals should help people with diabetes aim to achieve individualized targeted glycemic control to reduce the risk of macrovascular and microvascular risk as well as reduce the risk of COVID-19 and its complications. (Evidence B)

2. As we move into the recovery phase, diabetes health care services and practitioners should address the impact of the pandemic in higher-risk groups, including ethnic minority, deprived, and older populations. (Evidence B)

3. People with new-onset diabetes need to be follow up regularly in routine clinical practice to determine if diabetes is transient. (Evidence B)

4. There is no clear indication to change prescribing of glucose-lowering therapies in people with diabetes infected by the SARS-CoV02 virus. (Evidence B)

5. People with diabetes should be prioritized and offered SARS-CoV-2 vaccines. (Evidence B)

Additional Information for Medical Evaluation

1. Autoimmune Diseases

    a. People with type 1 diabetes should be screened for autoimmune thyroid disease soon after diagnosis and periodically thereafter. (Evidence B)

    b. Adults with type 1 diabetes should be screened for celiac disease in the presence of gastrointestinal symptoms, signs, laboratory manifestations, or clinical suspicion suggestive of celiac disease. (Evidence B)

2. Cognitive Impairment /Dementia

    a. In the presence of cognitive impairment, diabetes treatment plans should be simplified as much as possible and tailored to minimize the risk of hypoglycemia. (Evidence B)

Facilitating Positive Health Behaviors and Well-being to Improve Health Outcomes

Diabetes Self-Management Education and Support

1. All people with diabetes should participate in diabetes self-management education and support to facilitate the knowledge, decision-making, and skills mastery for diabetes self-care. (Evidence A)

2. Diabetes self-management education and support should be person-centered, and may be offered in group or individual settings, and should be communicated with the entire diabetes care team. (Evidence A)

3. Digital coaching and digital self-management interventions can be effective methods to deliver diabetes self-management education and support. (Evidence B)

4. Diabetes self-management education and support can improved outcomes and reduce costs. (Evidence B)

5. Include social determinants of health of the target population with the ultimate goal of health equity across all populations.

6. Consider addressing barriers to diabetes self-management education and support access through telehealth delivery of care (Evidence B)

Medical Nutrition Therapy (MNT) Recommendations

1. *Effectiveness:* An individual medical nutrition therapy program as needed to achieve treatment goals, provided by a registered dietitian nutritionist, preferably one who has comprehensive knowledge and experience in diabetes care, is recommended for all people with type 1 or type 2 diabetes, prediabetes, and gestational diabetes mellitus (Evidence A), as it can result in cost savings (Evidence B) and improved cardiometabolic outcomes. (Evidence A)

2. *Energy balance:* For all people with overweight or obesity, behavioral modification to achieve and maintain a minimum weight loss of 5% is recommended. (Evidence A)

3. *Eating patterns and macronutrient distribution:* A variety of eating patterns can be considered for the management of type 2 diabetes and to prevent diabetes in individuals with prediabetes. (Evidence B)

4. Reducing overall carbohydrate intake for individuals with diabetes has demonstrated the most evidence for improving glycemia and may be applied to a variety of eating patterns that meet individual needs and preferences. (Evidence B)

5. *Carbohydrates:*

   a. Carbohydrate intake should emphasize nutrient-dense carbohydrate sources that are high in fiber (at least 14 g fiber per 1000 kcal) and minimally processed. Eating plans should emphasize non-starchy vegetables, fruits, legumes, and whole grains, as well as dairy products with minimal added sugars (Evidence B)

   b. People with diabetes and those at risk are advised to replace sugar-sweetened beverages (including fruit juices) with water or low calorie, no calorie beverages as much as possible to manage glycemia and reduce risk for cardiometabolic disease (evidence B) and minimize consumption of foods with added sugar that have the capacity to displace healthier, more nutrient-dense food choices. (Evidence A)

   c. When using a flexible insulin therapy program, education on the glycemic impact of carbohydrate (evidence A), fat, and protein (evidence B) should be tailored to an individual's needs and preferences and used to optimize mealtime insulin dosing.

   d. When using fixed insulin doses, individuals should be provided with education about consistent patterns of carbohydrate intake with respect to time and amount while considering the insulin action time, as it can result in improved glycemia and reduce the risk for hypoglycemia. (Evidence B)

6. *Protein:* In individuals with type 2 diabetes, ingested protein appears to increase insulin response without increasing plasma glucose concentrations. Therefore, carbohydrate sources high in protein should be avoided when trying to treat or prevent hypoglycemia. (Evidence B)

7. *Micronutrients and herbal supplements:* There may be evidence of harm for certain individuals with B carotene supplementation. (Evidence B)

8. *Dietary fat:*

   c. An eating plan emphasizing elements of a Mediterranean eating pattern rich in monounsaturated and polyunsaturated fats may be considered to improve glucose metabolism and lower cardiovascular disease risk. (Evidence B)

   d. Eating foods rich in long-chain fatty acids, such as fatty fish (EPA and DHA) and nuts and seeds (ALA) is recommended to prevent or treat cardiovascular disease. (Evidence B)

9. *Alcohol:* Educating people with diabetes about the signs, symptoms, and self-management of delayed hypoglycemia after drinking alcohol, especially when using insulin or insulin secretagogues, is recommended. The importance of glucose monitoring after drinking alcoholic beverages to reduce hypoglycemia risk should be emphasized. (Evidence B)

10. *Sodium:* Sodium consumption should be limited to <2300 mg/day. (Evidence B)

11. *Nonnutritive sweeteners:* The use of nonnutritive sweeteners as a replacement for sugar-sweetened products may reduce overall calorie and carbohydrate intake as long as there is not a compensatory

increase in energy intake from other sources. There is evidence that low- and no-calorie sweetened beverages are a viable alternative to water. (Evidence B)

Physical Activity

1. Children and adolescents with type 2 diabetes should engage in 60 min/day or more of moderate- or vigorous-intensity aerobic activity, with vigorous muscle-strengthening activates at least 3 days/week. (Evidence B).

2. Most adults with type 2 diabetes should engage in 150 min or more o moderate- to vigorous-intensity aerobic activity per week, spread over at least 3 days/week, with no more than 2 consecutive days without activity. Shorter durations (minimum 75 min/week) of vigorous-intensity or interval training may be sufficient for younger and more physically fit individuals. (Evidence B)

3. Adults with type 2 diabetes should engage in 2-3 sessions/week of resistance exercise on nonconsecutive days. (Evidence B)

4. All adults, particularly those with type 2 diabetes, should decrease the amount of time spent in daily sedentary behavior (Evidence B)

5. Evaluate baseline physical activity and sedentary time. Promote increase in nonsedentary activities above baseline for sedentary individuals with type 2 diabetes with activities such as walking, yoga, housework, gardening, swimming, and dancing. (Evidence B)

Smoking Cessation: Tobacco and E-Cigarettes

1. Advise all patients not to use cigarettes or other tobacco products or e-cigarettes (Evidence A)

2. After identification of tobacco or e-cigarette use, include smoking cessation counseling and other forms of treatment as a routine component of diabetes care. (Evidence A)

3. Address smoking cessation as part of diabetes education programs for those in need. (Evidence B)

Behavioral Health

Supporting Positive Health Behaviors:

1. Behavioral strategies should be used to support diabetes self-management and engagement in health behaviors (e.g., taking medications, using diabetes technologies, physical activity, health eating) to promote optional diabetes health outcomes. (Evidence A)

Psychosocial Care:

1. Psychosocial care should be provided to all people with diabetes, with the goal of optimizing health-

related quality of life and health outcomes. Such care should be integrated with routine medical care and delivered by trained health care professionals using a collaborative, person-centered, culturally informed approach. (Evidence A) When indicated and available, qualified mental health professionals should provide additional targeted mental health care. (Evidence B)

2. When indicated, refer to mental health professionals or other trained health professionals for further assessment and treatment for symptoms of diabetes distress, depression, suicidality, anxiety, treatment–related fear of hypoglycemia, disordered eating, and/or cognitive capacities. Such specialized psychosocial care should use age-appropriate standardized and validated tools and treatment approaches. (Evidence B)

3. Consider screening older adults (≥65 years) with diabetes for cognitive impairment, frailty, and depressive symptoms. Monitoring of cognitive capacity, i.e. the ability to actively engage in decision-making regarding treatment plan behaviors, is advised. (Evidence B)

Diabetes Distress:

1. Routinely monitor people with diabetes, caregivers, and family members for diabetes distress, particularly when treatment targets are not met and/or at the onset of diabetes complications. Refer to a qualified mental health professional or other trained health care professional for further assessment and treatment if indicated. (Evidence B)

Anxiety:

1. Consider screening people with diabetes for anxiety symptoms or diabetes-related worries. Health care professionals can discuss diabetes-related worries and may refer to a qualified mental health professional for further assessment and treatment if anxiety symptoms indicate interference with diabetes self-management behaviors or quality of life. (Evidence B)

2. Refer people with hypoglycemia unawareness, which can co-occur with fear of hypoglycemia, to a trained professional to receive evidence-based intervention to help re-establish awareness of symptoms of hypoglycemia and reduce fear of hypoglycemia. (Evidence A)

Depression:

1. Consider at least annual screening of depressive symptoms in all people with diabetes, especially those with a self-reported history of depression. Use age-appropriate, validated depression screening measures, recognizing that further evaluation will be necessary for individuals who have a positive screen. (Evidence B)

2. Beginning at diagnosis of complications or when there are significant changes in medical status, consider assessment for depression. (Evidence B)

3. Refer to qualified mental health professionals with experience-based treatment approaches for depression in conjunction with collaborative care with the diabetes treatment team. (Evidence A)

Disordered Eating Behavior:

1. 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 treatment plan is recommended to identify potential treatment-related effects on hunger/caloric intake. (Evidence B)

2. Consider revaluating the treatment plan of people with diabetes who present with symptoms of disordered eating behavior, and eating disorder, or disrupted patterns of eating, in consultation with a qualitied professional as available. Key qualifications include familiarity with the diabetes disease physiology, treatments for diabetes and disordered eating behaviors, and weight-related and psychological risk factors for disordered eating behaviors. (Evidence B)

Serious Mental Illness:

1. Provide an increased level of support for people with diabetes and serious mental illness through enhanced monitoring of, and assistance with, diabetes self-management behaviors. (Evidence B)

2. In people who are prescribed atypical antipsychotic medications, screen for prediabetes and diabetes 4 months after medication initiation and sooner if clinically indicated, at least annually. (Evidence B)

Cognitive Capacity Impairment:

1. Cognitive capacity should be monitored throughout the life span for all individuals with diabetes, particularly in those who have documented cognitive disabilities, those who experience severe hypoglycemia, very young children, and older adults. (Evidence B)

Sleep Health:

1. Consider screening for sleep health in people with diabetes, including symptoms of sleep disorders, disruptions to sleep due to diabetes symptoms or management needs, and worries about sleep. Refer to sleep medicine and/or a qualified behavioral health professional as indicated. (Evidence B)

Management Plan

Glycemic Goals:

1. An A1C goal for many non-pregnant adults of <7% (53 mmol/mol) without significant hypoglycemia is appropriate. (Evidence A)

2. If using ambulatory glucose profile/glucose management indicator to assess glycemia, a parallel goal for many nonpregnant adults is time in range of >70% with time below range <4% and time <54 mg/dL <1%. For those with frailty or at high risk of hypoglycemia, a target of >50% time in range with <1% time below range is recommended. (Evidence B)

3. On the basis of health care professional judgement and patient preference, achievement of lower A1C levels than the goal of 7% may be acceptable and even beneficial if it can be achieved safely without significant hypoglycemia or other adverse effects of treatment. (Evidence B)

4. Less stringent A1C goals (such as <8%) [64 mmol/mol]) may be appropriate for patients with limited life expectancy or where the harms of treatment are greater than the benefits. Health care professionals should consider deintensification of therapy if appropriate to reduce the risk of hypoglycemia in patients with inappropriate stringent A1C targets. (Evidence B)

Hypoglycemia:

1. Glucose (approximately 15-20 g) is the preferred treatment for the conscious individual with blood glucose <70 mg/dL (3.9 mmol/L), although any form of carbohydrate that contains glucose may be used. Fifteen minutes after treatment, if blood glucose monitoring shows continued hypoglycemia, the treatment should be repeated. Once the glucose pattern is trending up, the individual should consume a meal or snack to prevent recurrence of hypoglycemia. (Evidence B)

2. Insulin-treated patients with hypoglycemia unawareness, one level 3 hypoglycemic event, or a pattern of unexplained level 2 hypoglycemia should be advised to raise their glycemic targets to strictly avoid hypoglycemia for at least several weeks in order to partially reverse hypoglycemia unawareness and reduce risk of future episodes. (Evidence A)

3. Ongoing assessment of cognitive function is suggested with increased vigilance for hypoglycemia by the clinician, patient, and caregivers if impaired or declining cognition is found. (Evidence B)

Diabetes Technology

Blood Glucose Monitoring:

1. People with diabetes should be provided with blood glucose monitoring devices as indicated by their circumstances, preferences, and treatment. People using continuous glucose monitoring devices mush also have access to blood glucose monitoring at all times. (Evidence A)

2. People who are on insulin using blood glucose monitoring should be encouraged to check their blood glucose levels when appropriate based on their insulin therapy. This may include checking when fasting, prior to meals and snacks, after meals, at bedtime, prior to exercise, when hypoglycemia is suspected, after treating low blood glucose levels until they are normoglycemic, when hyperglycemia is suspected, and prior to performing critical tasks such as driving. (Evidence B)

Continuous Glucose Monitoring Devices:

1. Real-time continuous glucose monitoring should be offered for diabetes management in adults with diabetes on basal insulin who are capable of using the devices safely (either by themselves or with a caregiver). The choice of device should be made on the individual's circumstances, preferences, and needs. (Evidence A)

2. Real-time continuous glucose monitoring should be offered for diabetes management in youth with type 1 diabetes on multiple daily injection or continuous subcutaneous insulin infusion who are capable of using the devices safely (either by themselves or with a caregiver). The choice of device should be made based on the individual's circumstances, preferences, and needs. (Evidence B)

3. In people with diabetes on multiple daily injections or continuous subcutaneous insulin infusion, real-time continuous glucose monitoring devices should be used as close to daily as possible for maximal benefit. Intermittently scanned continuous glucose monitoring devices should be scanned frequently, at a minimum once every 8 h. People with diabetes should have uninterrupted access to their supplies to minimize gaps in continuous glucose monitoring. (Evidence A)

4. When used as an adjunct to pre- and postprandial blood glucose monitoring, continuous glucose monitoring can help to achieve A1C targets in diabetes and pregnancy. (Evidence B)

Insulin Delivery Systems:

1. Automated insulin delivery systems should be offered for diabetes management to youth and adults with type 1 diabetes who are capable of using the device safely (either by themselves or with a caregiver). The choice of device should be made based on the individual's circumstances, preferences, and needs. (Evidence A)

2. Insulin pump therapy alone with or without sensor-augmented pump low glucose suspend feature and/or automated insulin delivery systems should be offered for diabetes management to youth and adults on multiple daily injections with type 1 diabetes who are capable of using the device safely (either by themselves or with a caregiver) and are not able to use or do not choose an automated insulin delivery system. The choice of device should be made based on the individual's circumstances, preferences, and needs. (Evidence A)

3. Insulin pump therapy can be offered for diabetes management to youth and adults on multiple daily injections with type 2 diabetes who are capable of using the device safety (either by themselves or with a caregiver). The choice of device should be made based on the individual's circumstances, preferences, and needs. (Evidence A)

Digital Health Technology:

1. Systems that combine technology and online coaching can be beneficial in treating prediabetes and diabetes for some individuals. (Evidence B)

Obesity and Weight Management for the Prevention and Treatment of Type 2 Diabetes

Assessment:

1. Based on clinical consideration, such as the presence of comorbid heart failure or significant unexplained weight gain or loss, weight many need to be monitored and evaluated more frequently. (Evidence B)

2. Individuals with diabetes and overweight or obesity may benefit from modest or larger magnitudes of weight loss. Relatively small weight loss (approximately 3-7% of base line weight) improves glycemia and other intermediate cardiovascular risk factors (Evidence A). Larger, sustained weight losses (>10%) usually confer greater benefits, including disease-modifying effects and possible remission of type 2 diabetes, and may improve long-term cardiovascular outcomes and mortality. (Evidence B)

Nutrition, Physical Activity, and Behavioral Therapy:

1. Nutrition, physical activity, and behavioral therapy to achieve and maintain ≥5% weight loss are recommended for most people with type 2 diabetes and overweight or obesity. Additional weight loss usually results in further improvements in the management of diabetes and cardiovascular risk. (Evidence B)

2. Such interventions should include a high frequency of counseling (≥16 sessions in 6 months) and focus on nutrition changes, physical activity, and behavioral strategist to achieve a 500-750 kcal/day energy deficit. (Evidence A)

3. Behavioral changes that create an energy deficit, regardless of macronutrient composition, will result in weight loss. Nutrition recommendations should be individualized to the person's preferences and nutritional needs. (Evidence A)

4. For those who achieve weigh loss goals, long-term (≥1 year) weight maintenance programs are recommended when available. Such programs should, at minimum, provide monthly contact and support, recommend ingoing monitoring of body weight (weekly or more frequently) and other self-monitoring strategies, and encourage regular physical activity (200-300 min/week). (Evidence A)

5. Short-term nutrition intervention using structured, very-low-calorie meals (800-1000 kcal/day) may be prescribed for carefully selected individuals by trained practitioners in medical settings with close monitoring,. Long-term, comprehensive weight maintenance strategies and counseling should be integrated to maintain weight loss. (Evidence B)

6. There is no clear evidence that nutrition supplements are effective for weight loss. (Evidence A)

Pharmacotherapy:

1. When choosing glucose-lowering medication for people with type 2 diabetes and overweight or obesity, consider the medication's effect on weight. (Evidence B)

2. Obesity pharmacotherapy is effective as an adjunct to nutrition, physical activity, and behavioral counseling for selected people with type 2 diabetes and BMI ≥27 kg/m². Potential benefits and risks must be considered. (Evidence A)

3. If obesity pharmacotherapy is effective (typically defined as ≥5% weight loss after 3 month's use) or if there are significant safety or tolerability issues, consider discontinuation of the medication and evaluate alternative medications or treatment approaches. (Evidence A)

Metabolic Surgery:

1. Metabolic surgery should be a recommended option to treat type 2 diabetes in screened surgical candidates with BMI ≥40 kg/m² (BMI ≥ 37.5 kg/m² in Asian American individuals) and in adults with BMI 35.0-39.9 kg/m² (32.5-37.4 kg/m² in Asian America individuals) who do not achieve durable weight loss and improvement in comorbidities (including hyperglycemia) with nonsurgical methods. (Evidence A)

2. Metabolic surgery may be considered as an option to treat type 2 diabetes in adults with BMI 30.0-34,9 kg/m² (27.5-32.4 kg/m² in Asian American individuals) who do not achieve durable weight loss and improvement in comorbidities (including hyperglycemia) with nonsurgical methods. (Evidence A)

3. People being considered for metabolic surgery should be evaluated for comorbid psychological conditions and social and situational circumstances that have the potential to interfere with surgery outcomes. (Evidence B)

4. People who undergo metabolic surgery should receive long-term medical and behavioral support and routine micronutrient, nutritional, and metabolic status monitoring. (Evidence B)

5. If postbariatric hypoglycemia is suspected, clinical evaluation should exclude other potential disorders contributing to hypoglycemia, and management includes education, medical nutrition therapy with a dietician experienced in postbariatric hypoglycemia, and medication treatment, as needed. (Evidence A)

Pharmacologic Approaches to Glycemic Treatment

Pharmacologic Therapy for Adults with Type 1 Diabetes:

1. Most individuals with type 1 diabetes should be treated with multiple daily injections of prandial and basal insulin, or continuous subcutaneous insulin infusion. (Evidence A)

2. Most individuals with type 1 diabetes should use rapid-acting insulin analogs to reduce hypoglycemia risk. (Evidence A)

3. Individuals with type 1 diabetes should receive education on how to match mealtime insulin doses to carbohydrate intake, fat and protein content, and anticipated physical activity. (Evidence B)

Pharmacologic Therapy for Adults with Type 2 Diabetes:

1. Healthy lifestyle behaviors, diabetes self-management education and support, avoidance of clinical inertia, and social determinants of health should be considered in the glucose-lowering management of type 2 diabetes. Pharmacologic therapy should be guided by person-centered treatment factors, including comorbidities and treatment goals. (Evidence A)

2. In adults with type 2 diabetes and established/high risk of atherosclerotic cardiovascular disease, heart failure, and/or chronic kidney disease, the treatment regimen should include agents that reduce cardiorenal risk. (Evidence A)

3. Pharmacologic approaches that provide adequate efficacy to achieve that maintain treatment goals should be considered, such as metformin or other agents, including combination therapy. (Evidence A)

4. Weight management is an impactful component of glucose-lowering management in type 2 diabetes. The glucose-lowering treatment regimen should consider approaches that support weight management goals. (Evidence A)

5. Metformin should be continued upon initiation of insulin therapy (unless contraindicated or not tolerated) for ongoing glycemic and metabolic benefits. (Evidence A)

6. Early combination therapy can be considered in some individuals as treatment initiation to extend the time to treatment failure. (Evidence A)

7. Among individuals with type 2 diabetes who have established atherosclerotic cardiovascular disease or indicators of high cardiovascular risk, established kidney disease or heart failure, a sodium-glucose cotransporter 2 inhibitor and/or glucagon-like peptide 1 receptor agonist with demonstrated cardiovascular disease benefit is recommended as part of the glucose-lowering regimen and comprehensive cardiovascular risk reduction, independent of A1C and in consideration of person-specific factors. (Evidence A)

8. In adults with type 2 diabetes, a glucagon-like peptide 1 receptor agonist is preferred to insulin when possible. (Evidence A)

9. If insulin is used, combination therapy with glucagon-like peptide 1 receptor agonist is recommended for greater efficacy, durability of treatment effect, and weight and hypoglycemia benefit. (Evidence A)

10. Recommendation for treatment intensification for individuals not meeting treatment goals should not be delayed. (Evidence A)

Cardiovascular Disease and Risk Management

Screening and Diagnosis:

1. Blood pressure should be measured at every routine clinical visit. When possible, individuals found to have elevated blood pressure should have blood pressure confirmed using multiple readings, including measurements on a separate day, to diagnose hypertension. (Evidence A) Hypertension is defined as a systolic blood pressure ≥130 mmHg or a diastolic blood pressure ≥80 mm/Hg based on an average of ≥ 2 measurements obtained on ≥2 occasions. (Evidence A)

2. All people with hypertension and diabetes should monitor their blood pressure at home. (Evidence A)

Treatment Goals:

1. For people with diabetes and hypertension, blood pressure targets should be individualized through a shared decision-making process that addresses cardiovascular risk, potential adverse effects of antihypertensive medications, and patient preferences. (Evidence B)

2. People with diabetes and hypertension qualify for antihypertensive drug therapy when the blood pressure is persistently elevated ≥130/80 mmHg. The on-treatment target blood pressure goal is <130/80 mmHg, if it can be safely attained. (Evidence B)

3. In pregnant individuals with diabetes and chronic hypertension, a blood pressure threshold of 140/90 mm/Hg for initiation or titration of therapy is associated with better pregnancy outcomes than reserving treatment for severe hypertension, with no increase in risk of small-for-gestational age birth weight. A blood pressure target of 110-135/85 mmHg is suggested in the interest of reducing the risk for accelerated maternal hypertension. (Evidence A)

Treatment Strategies

Lifestyle Interventions:

1. For people with blood pressure >20/80 mmHg, lifestyle intervention consists of weight loss when indicated, a Dietary Approaches to Stop Hypertension (DASH)-style eating pattern including reducing sodium and increasing potassium intake, moderation of alcohol intake, and increased physical activity. (Evidence A)

Pharmacologic Interventions:

1. Individuals with confirmed office-based blood pressure ≥130/80 qualify for initiation and titration of pharmacologic therapy to achieve the recommended blood pressure goal of <130/80 mmHg. (Evidence A)

2. Individuals with confirmed office-based blood pressure ≥160/100 mmHg should, in addition to lifestyle therapy, have prompt initiation and timely titration of two drugs or a single-pill combination of drugs demonstrated to reduce cardiovascular events in people with diabetes. (Evidence A)

3. Treatment for hypertension should include drug classes demonstrated to reduce cardiovascular events in people with diabetes. ACE inhibitors or angiotensin receptor blockers are recommended first-line therapy for hypertension in people with diabetes and coronary artery disease. (Evidence A)

4. Multiple-drug therapy is generally required to achieve blood pressure targets. However, combinations of ACE inhibitors and angiotensin receptor blockers and combinations of ACE inhibitors or angiotensin receptor blockers with direct renin inhibitors should not be used. (Evidence A)

5. An ACE inhibitor or angiotensin receptor locker, at the maximum tolerated dose indicated for blood pressure treatment, is the recommended first-line treatment for hypertension in people with diabetes and urinary albumin-to-creatinine ration ≥300 mg/g creatinine (evidence A) or 30-299 mg/g creatinine (evidence B). If one class is not tolerated, the other should be substituted. (Evidence B)

6. For patients treated with an ACE inhibitor, angiotensin receptor blocker, or a diuretic, serum creatinine/estimated glomerular filtration rate and serum potassium levels should be monitored at least annually. (Evidence B)

Resistant Hypertension:

1. Individuals with hypertension who are not meeting blood pressure targets on three classes of

   antihypertensive medications (including a diuretic) should be considered for mineralocorticoid receptor antagonist therapy. (Evidence A)

Lipid Management

Lifestyle Intervention:

1. Lifestyle modification focusing on weight loss (if indicated); application of a Mediterranean or Dietary Approaches to Stop Hypertension (DASH) eating pattern; reduction of saturated fat and *trans* fat; increase of dietary n-3 fatty acids, viscous fiber, and plant stanols/sterols intake; and increased physical activity should be recommended to improve the lipid profile and reduce the risk of developing atherosclerotic cardiovascular disease in people with diabetes. (Evidence A)

Statin Treatment

Primary Prevention:

1. For people with diabetes aged 40-75 years without atherosclerotic cardiovascular disease, use moderate-intensity statin therapy in additional to lifestyle therapy (Evidence A)

2. For people with diabetes aged 40-75 at higher cardiovascular risk, including those with one or more atherosclerotic cardiovascular disease risk factors, it is recommended to use high-intensity statin therapy to reduce LDL cholesterol by ≥50% of baseline and to target an LDL cholesterol goal of <70 mg/dL. (Evidence B)

3. In adults with diabetes aged >75 years already on statin therapy, it is reasonable to continue statin treatment. (Evidence B)

4. Statin therapy is contraindicated in pregnancy. (Evidence B)

Secondary Prevention:

1. For people of all ages with diabetes and atherosclerotic cardiovascular disease, high intensity statin therapy should be added to lifestyle therapy. (Evidence A)

2. For people with diabetes and atherosclerotic cardiovascular disease, treatment with high-intensity statin therapy is recommended to target an LDL cholesterol reduction of ≥50% from baseline and an LDL cholesterol goal of <55 mg/dL. Addition of ezetimibe or a PCSK9 inhibitor with proven benefit in this population is recommended if this goal is not achieved on maximum tolerated statin therapy. (Evidence B)

Treatment of Other Lipoprotein Fractions or Targets:

1. In individuals with atherosclerotic cardiovascular disease or other cardiovascular risk factors on a statin with controlled LDL cholesterol but elevated triglycerides (135-499 mg/dL), the addition of icosapent ethyl can be considered to reduce cardiovascular risk. (Evidence A)

Other Combination Therapy:

1. Statin plus fibrate combination therapy has not been shown to improve atherosclerotic cardiovascular disease outcomes and is generally not recommended. (Evidence A)

2. Statin plus niacin combination therapy has not been shown to provide additional cardiovascular benefit above statin therapy alone, may increase the risk of stroke with additional side effects and is generally not recommended. (Evidence A)

Antiplatelet Agents

1. Use aspirin therapy (75-162 mg/day) as a secondary prevention strategy in those with diabetes and a history of atherosclerotic cardiovascular disease. (Evidence A)

2. For individuals with atherosclerotic cardiovascular disease and documented aspirin allergy, clopidogrel (75 mg/day) should be used. (Evidence B)

3. Dual antiplatelet therapy (with low dose aspirin and a P2Y12 inhibitor is reasonable for a year after acute coronary syndrome and may have benefits beyond this period. (Evidence A)

4. Long-term treatment with dual antiplatelet therapy should be considered for individuals with prior coronary intervention, high ischemic risk, and low bleeding risk to prevent major adverse cardiovascular events. (Evidence A)

5. Combination therapy with aspirin plus low-dose rivaroxaban should be considered for

6. Individuals with stable coronary and/or peripheral artery disease and low bleeding risk to prevent major adverse limb and cardiovascular events. (Evidence A)

7. Aspirin therapy (75-162 mg/day) may be considered as a primary prevention strategy in those with diabetes who are at increased cardiovascular risk after a comprehensive discussion with the patient on the benefits versus the comparable increased risk of bleeding. (Evidence A)

Cardiovascular Disease

Screening:

1. In asymptomatic individuals, routine screening for coronary artery disease is not recommended as it does not improve outcomes as long as atherosclerotic cardiovascular disease risk factors are treated. (Evidence A)

Treatment:

1. Among people with type 2 diabetes who have established atherosclerotic cardiovascular disease or established kidney disease, as sodium-glucose cotransporter 2 inhibitor or glucagon-like peptide 1

   Receptor agonist with demonstrated cardiovascular disease benefit is recommended as part of the comprehensive cardiovascular risk reduction and/or glucose lowering regimens. (Evidence A)

2. In people with type 2 diabetes and established atherosclerotic cardiovascular disease, multiple atherosclerotic cardiovascular disease risk factors, or diabetic kidney disease, a sodium-glucose cotransporter 2 inhibitor with demonstrated cardiovascular benefit is recommended to reduce the risk of major adverse cardiovascular events and/or heart failure hospitalization. (Evidence A)

3. In people with type 2 diabetes and established atherosclerotic cardiovascular disease or multiple risk factors for atherosclerotic cardiovascular disease, a glucagon-like peptide 1 receptor agonist with demonstrated cardiovascular benefit is recommended to reduce the risk of major adverse cardiovascular events. (Evidence A)

4. In people with type 2 diabetes and established atherosclerotic cardiovascular disease or multiple risk factors for atherosclerotic cardiovascular disease, combined therapy with a sodium-glucose cotransporter 2 inhibitor with demonstrated cardiovascular benefit and a glucagon-like peptide 1 receptor agonist with demonstrated cardiovascular benefit may be considered for additive reduction in the risk of adverse cardiovascular and kidney events. (Evidence A)

5. In people with type 2 diabetes and established heart failure with either preserved or reduced ejection fraction, a sodium-glucose cotransporter 2 inhibitor with proven benefit in this patient population is recommended to reduce risk of worsening heart failure and cardiovascular death. (Evidence A)

6. In people with type 2 diabetes and established heart failure with either preserved or reduced ejection fraction, a sodium-glucose cotransporter 2 inhibitor with proven benefit in this patient population is recommended to improve symptoms, physical limitations, and quality of life. (Evidence A)

7. For people with type 2 diabetes and chronic kidney disease with albuminuria treated with maximum tolerated doses of ACE inhibitor or angiotensin receptor blocker, addition of finerenone is recommended to improve cardiovascular outcomes and reduce the risk of chronic kidney disease progression. (Evidence A)

8. In people with known atherosclerotic cardiovascular disease, particularly coronary artery disease, ACE inhibitor or angiotensin receptor blocker therapy is recommended to reduce the risk of cardiovascular events. (Evidence A)

9. In people with prior myocardial infarction, ß-blockers should be continued for 3 years after the event. (Evidence B)

10. Treatment of individuals with heart failure with reduced ejection fraction should include a ß-blocker with proven cardiovascular outcomes benefit, unless otherwise contraindicated. (Evidence A)

11. In people with type 2 diabetes with stable heart failure, metformin may be continued for glucose lowering if estimated glomerular filtration rate remains >30 mL/min/1.73m² but should be avoided in unstable or hospitalized individuals with heart failure. (Evidence B)

Chronic Kidney Disease and Risk Management

Screening:

1. At least annually, urinary albumin (e.g., spot urinary albumin-to-creatinine ratio) and estimated glomerular filtration rate should be assessed in people with type 1 diabetes with duration of ≥5 years and in all people with type 2 diabetes regardless of treatment. (Evidence B)

2. In people with established diabetic kidney disease, urinary albumin (e.g., spot urinary albumin-to-creatinine ratio) and estimated glomerular filtration rate should be monitored 1-4 times per year depending on the stage of the disease. (Evidence B)

Treatment:

1. Optimize glucose control to reduce the risk or slow the progression of chronic kidney disease (Evidence A)

2. Optimize blood pressure control and reduce blood pressure variability to reduce the risk or slow the progression of chronic kidney disease. (Evidence A)

3. In non-pregnant people with diabetes and hypertension, either an ACE inhibitor or an angiotensin receptor blocker is recommended for those with moderately increased albuminuria (urinary albumin-to-creatinine ratio 30-299 mg/g creatinine (Evidence B) and is strongly recommended for those with severely increased albuminuria (urinary albumin-to-creatinine ratio ≥300 mg/g creatinine) and/or estimated glomerular filtration rate <60mL/min/1.73 m². (Evidence A)

4. Periodically monitor serum creatinine and potassium levels for the development of increased creatinine and hyperkalemia when ACE inhibitors, angiotensin receptor blockers, and mineralocorticoid receptor antagonists are used, or hypokalemia when diuretics are used. (Evidence B)

5. An ACE inhibitor or an angiotensin receptor blocker is not recommended for the primary prevention of chronic kidney disease in people with diabetes who have normal blood pressure, normal urinary albumin-to-creatinine ratio (<30 mg/g creatinine), and normal estimated glomerular filtration rate. (Evidence A)

6. Do not discontinue renin-angiotensin system blockade for increases in serum creatinine (≤30%) in the absence of volume depletion. (Evidence A)

7. For people with type 2 diabetes and diabetic kidney disease, use of a sodium-glucose co-transporter 2 inhibitor is recommended to reduce chronic kidney disease progression and cardiovascular events in patients with an estimated glomerular filtration rate ≥20 mL/min/1.73m² and urinary albumin ≥200 mg/g creatinine. (Evidence A)

8. For people with type 2 diabetes and diabetic kidney disease, use of a sodium-glucose cotransporter 2 inhibitor is recommended to reduce chronic kidney disease progression and cardiovascular events in patients with an estimated glomerular filtration rate ≥20 mL/min/1.73 m² and urinary albumin ranging from normal to 200 mg/g creatinine. (Evidence B)

9. In people with type 2 diabetes and diabetic kidney disease, consider use of sodium-glucose cotransporter 2 inhibitors (if estimated glomerular filtration rate is ≥20 mL/min/1.73 m²), a glucagon-like peptide 1 agonist, or a nonsteroidal mineralocorticoid receptor agonist (if estimated glomerular filtration rate is ≥25 mL/min/1.73m²) additionally for cardiovascular risk reduction. (Evidence A)

10. In people with chronic kidney disease and albuminuria who are at increased risk for cardiovascular events or chronic kidney disease progression, a nonsteroidal mineralocorticoid receptor antagonist shown to be effective in clinical trials is recommended to reduce chronic kidney disease progression and cardiovascular events. (Evidence A)

11. In people with chronic kidney disease who have ≥300 mg/g urinary albumin, a reduction of 30% or greater in mg/g urinary albumin is recommended to slow chronic kidney disease progression. (Evidence B)

12. Patients should be referred for evaluation by a nephrologist if they have continuously increasing urinary albumin level and/or continuously decreasing estimated glomerular filtration rate and if the estimated glomerular filtration rate is <30 mL/min/1.73 m². (Evidence A)

13. Promptly refer to a nephrologist for uncertainty about the etiology of kidney disease, difficult management issues, and rapidly progressing kidney disease. (Evidence A)

Retinopathy, Neuropathy, and Foot Care

Diabetic Retinopathy:

1. Optimize glycemic control to reduce the risk or slow the progression of diabetic retinopathy. (Evidence A)

2. Optimize blood pressure and serum lipid control to reduce the risk or slow the progression of diabetic retinopathy. (Evidence A)

Screening:

1. Adults with type 1 diabetes should have an initial dilated and comprehensive eye examination by an ophthalmologist or optometrist within 5 years after the onset of diabetes. (Evidence B)

2. People with type 2 diabetes should have an initial dilated and comprehensive eye examination by an ophthalmologist or optometrist at the time of the diabetes diagnosis. (Evidence B)

3. If there is no evidence of retinopathy for one or more annual eye exams and glycemia is well controlled, then screening every 1-2 years may be considered. If any level of diabetic retinopathy is present, subsequent dilated retinal examinations should be repeated at least annually by an ophthalmologist or optometrist. If retinopathy is progressing or sight-threatening, then examinations will be required more frequently. (Evidence B)

4. Programs that use retinal photography (with remote reading or use of a validated assessment tool) to improve access to diabetic retinopathy screening can be appropriate screening strategies for diabetic retinopathy. Such programs need to provide pathways for timely referral for a comprehensive eye examination with indicated. (Evidence B)

5. Individuals with preexisting type 1 or type 2 diabetes should receive an eye exam before pregnancy and in the first trimester and should be monitored every trimester and for 1 year postpartum as indicated by the degree of retinopathy. (Evidence B)

Treatment:

1. Promptly refer individuals with any level of diabetic macular edema, moderate or worse nonproliferative diabetic retinopathy (a precursor of proliferative diabetic retinopathy), or any proliferative diabetic retinopathy to an ophthalmologist who is knowledgeable and experienced in the management of diabetic retinopathy. (Evidence A)

2. Panretinal laser photocoagulation therapy is indicated to reduce the risk of vision loss in individuals with high risk proliferative diabetic retinopathy and, in some cases , severe nonproliferative diabetic retinopathy, (Evidence A)

3. Intravenous injections of anti-vascular endothelial growth factor are a reasonable alternative to traditional panretinal laser photocoagulation for some individual with proliferative diabetic retinopathy and also reduce the risk of vision loss in these individuals. (Evidence A)

4. Intravitreous injections of anti-vascular endothelial growth factor are indicated as first-line treatment for most eyes with diabetic macular edema that involves the foveal center and impairs vision acuity. (Evidence A)

5. Macular focal/grid photo-coagulation and intravitreal injections of corticosteroid are reasonable treatments in eyes with persistent diabetic macular edema despite previous anti-vascular endothelial growth factor therapy or eyes that are not candidates for this first line approach. (Evidence A)

6. The presence of retinopathy is not a contraindication to aspirin therapy for cardioprotection, as aspirin does not increase the risk of retinal hemorrhage. (Evidence A)

Screening:

1. All people with diabetes should be assessed for diabetic peripheral neuropathy starting at diagnosis of type 2 diabetes and 5 years after the diagnosis of type 1 diabetes and at least annually thereafter. (Evidence B)

2. Assessment for distal symmetric polyneuropathy should include a careful history and assessment of either temperature or pinprick sensation (small-fiber function) and vibration sensation using a 128-Hz tuning fork (for large-fiber function). All people with diabetes should have annual 10-g monofilament testing to identify feet at risk for ulceration ad amputation. (Evidence B)

Treatment:

1. Optimize glucose control to prevent or delay the development of neuropathy in people with type 1 diabetes (Evidence A). Optimize blood pressure and serum lipid control to reduce the risk or low the progression of diabetic neuropathy. (Evidence B)

2. Assess and treat pain related to diabetic peripheral neuropathy. (Evidence B)

Foot Care:

1. Perform a compressive foot evaluation at least annually to identify risk factor for ulcers and amputations. (Evidence A)

2. The examination should include inspection of the skin, assessment of for deformities, neurological assessment (10-g monofilament testing with at least one other assessment: pinprick, temperature, vibration), and vascular assessment, including pulses in the legs and feet. (Evidence B)

3. Individuals with evidence of sensory loss or prior ulceration or amputation should have their feet inspected at every visit. (Evidence A)

4. Obtain a prior history of ulceration, amputation, Charcot foot, angioplasty or vascular surgery, cigarette smoking, retinopathy, and renal disease and assess current symptoms of neuropathy (pain, burning, numbness) and vascular disease (leg fatigue, claudication). (Evidence B)

5. Initial screening for peripheral arterial disease should include assessment of lower-extremity pulses, capillary refill time, rubor on dependence, pallor on elevation, and venous filling time. Individuals with a history of leg fatigue, claudication, and rest pain relieved with dependency or decreased or absent pedal pulses should be referred for ankle-brachial index and for further vascular assessment as appropriate. (Evidence B)

6. Refer individuals who smoke and have a history of prior lower-extremity complications, loss of protective sensation, structural abnormalities, or peripheral arterial disease to foot care specialist for ongoing preventative care and lifelong surveillance. (Evidence B)

7. Provide general preventive foot self-care education to all people with diabetes, including those with loss

of protective sensation, on appropriate ways to examine their feet (palpation or visual inspection with an unbreakable mirror) for daily surveillance of early foot problems. (Evidence B)

8. The use of specialized therapeutic footwear is recommended for people at high risk for ulceration, including those with loss of protective sensation, foot deformities, ulcers, callous formation, poor peripheral circulation, or history of amputation. (Evidence B)

9. For chronic foot diabetic foot ulcers that have failed to heal with optimal standard care alone, adjunctive treatment with randomized controlled trial-proven advanced agents should be considered. Considerations might include negative-pressure would therapy, placental membranes, bioengineered skin substitutes, several acellular matrices, autologous fibrin and leukocyte platelet patches, and topical oxygen therapy. (Evidence A)

Older Adults:

1. Consider the assessment of medical, psychological, functional (self-management abilities), and social domains in older adults to provide a framework to determine targets and therapeutic approaches for diabetes management. (Evidence B)

2. Screen for geriatric syndromes (i.e., polypharmacy, cognitive impairment, depression, urinary incontinence, falls, persistent pain, and frailty) in older adults, as they may affect diabetes self-management and diminish quality of life. (Evidence B)

Neurocognitive Function:

1. Screening for early detection of mild cognitive impairment or dementia should be performed for adults 65 years of age or older at the initial visit, annually, and as appropriate. (Evidence B)

Hypoglycemia:

1. Because older adults with diabetes have a greater risk of hypoglycemia than younger adults, episodes of hypoglycemia should be ascertained and addressed at routine visits. (Evidence B)

2. For older adults with type 1 diabetes, continuous glucose monitoring is recommended to reduce hypoglycemia. (Evidence A)

3. For older adults with type 2 diabetes on multiple daily doses of insulin, continuous glucose monitoring should be considered to improve glycemic outcomes and decrease glucose variability. (Evidence B)

4. For older adults with type 1 diabetes, consider the use of automated insulin delivery systems to reduce risk of hypoglycemia, based on individual variability. (Evidence B)

Lifestyle Management:

1. Optimal nutrition and protein intake is recommended for older adults; regular exercise, including aerobic activity, weight-bearing exercise, and/or resistance training, should be encouraged in all older adults who can safely engage in such activities. (Evidence B)

2. For older adults with type 2 diabetes, overweight/obesity, and capacity to safely exercise, an intensive lifestyle intervention focused on dietary changes, physical activity, and modest weight loss (e.g., 5-7%) should be considered for its benefits on quality of life, mobility and physical functioning, and cardiometabolic risk factor control. (Evidence A)

Pharmacologic Therapy:

1. In older adults with type 2 diabetes at increased risk of hypoglycemia, medication classes with low risk of hypoglycemia are preferred. (Evidence B)

2. Overtreatment of diabetes is common in older adults and should be avoided. (Evidence B)

3. Deintensification of treatment goals is recommended to reduce the risk of hypoglycemia if it can be achieved within the individualized A1C target. (Evidence B)

4. Simplification of complex treatment plans (especially insulin) is recommended to reduce the risk of hypoglycemia and polypharmacy and decrease the burden of the disease if it can be achieved within the individualized A1C target. (Evidence B)

5. Consider costs of care and insurance coverage rules when developing treatment plans in order to reduce the cost-related barriers to adherence. (Evidence B)

End of Life Care:

1. When palliative care is needed in older adults with diabetes, health care professionals should initiate conversations regarding the goals and intensity of care. Simplification of regimens can be considered. Similarly, the intensity of lipid management can be relaxed and withdrawal of lipid lowering therapy may be appropriate. (Evidence A)

Annual Measurement for Effectiveness of Diabetes Guideline

HEDIS® Comprehensive Diabetes Care, Commercial and Medicare populations:

- *HbA1c Testing*
- *Poor HbA1c control (>9%, no result on record, or HbA1c was not done during the measurement year)*
- *HbA1c Control (<8%)*
- *Statin Medication Adherence Retinal Eye Exam*
- *Kidney Health Evaluation, defined as having eGFR and uACR during the measurement year*
- *Blood Pressure Controlled <140/90 mm Hg*

ADA recommendations are assigned rating of A, B or C depending on the quality of evidence:

- *Evidence A- recommendations are based on large well-designed clinical trials or well-done meta-analyses*
- *Evidence B- recommendations are based on well-conducted cohort studies*
- *Evidence C- supportive evidence from poorly controlled or uncontrolled studies. There may be evidence from observational studies or conflicting evidence where the weight of the evidence supports the recommendation*
- *Evidence E- Expert opinion or clinical experience*

References:

American Diabetes Association; Standards of Medical Care in Diabetes - 2023

NCQA; Technical Specifications for Health Plans; HEDIS MY 2023, Volume2