Diabetes is a complex, chronic illness requiring continuous medical care from a multidisciplinary team of healthcare professionals who provide multifactorial risk-reduction strategies beyond glycemic control. Ongoing patient self-management education and support are critical to preventing acute complications and reducing the risk of long-term complications. Significant evidence exists that supports a range of interventions to improve diabetes outcomes.

The ADA’s “Standards of Medical Care in Diabetes, (commonly referred to as the “Standards of Care)” is intended to provide clinicians, patients, researchers, payers, and other interested individuals with the components of diabetes care, general treatment goals, and tools to evaluate the quality of care. These recommendations are not intended to preclude clinical judgment, but must be applied in the context of excellent clinical care, with adjustments for individual preferences, comorbidities, and other patient factors.

Standards of Care is a position statement that provides key clinical practice recommendations put forth by the Association’s Professional Practice Committee, which performs an extensive literature search and updates the recommendations annually based on the quality of new evidence. However, healthcare practitioners (HCPs) are not always aware of the changes that take place from year to year. HCPs need to be educated on changes that take place within the most recent ADA Standards of Care, so as to individualize treatment and develop management strategies in collaboration with their patient(s) that provide an overall benefit.

Evidence is only one component of clinical decision making when managing a person with diabetes. Guidelines must always be interpreted with the individual patient in mind. Individual circumstances, such as comorbid and coexisting diseases, age, education, and disability, and, above all, patients’ values and preferences must be considered and may lead to different treatment targets and strategies. Hence, recommendations in the Standards of Care should be interpreted with the individual patient in mind.

The 2017 Standards of Care incorporate several new guidelines from position statements issued in 2016 by the ADA, including those on physical activity, psychosocial health, metabolic surgery and hypoglycemia (low blood glucose). In addition, there are new recommendations for assessing comorbidities, expanded treatment options for patients with hypertension or cardiovascular disease, a new insulin algorithm, and new tables on medication costs.

References:


An Update on the Standards of Medical Care in Diabetes – 2017

Rita Rastogi Kalyani, MD, MHS
Associate Professor of Medicine
Johns Hopkins University School of Medicine
Chair, ADA’s Professional Practice Committee

Standards of Care

• Funded out of the Association’s general revenues and does not use industry support.
• Slides correspond with sections within the Standards of Medical Care in Diabetes - 2017.
• Reviewed and approved by the Association’s Board of Directors.

Process

• ADA’s Professional Practice Committee (PPC) conducts annual review & revision of the SOC.
• Searched Medline for human studies related to each subsection and published since January 1, 2016.
• Recommendations revised per new evidence, for clarity, or to better match text to strength of evidence.

Professional Practice Committee -- SOC 2017

Members of the PPC
William H. Herman, MD, MPH (Co-Chair)
Rita Rastogi Kalyani, MD, MHS, FACP (Co-Chair)*
Andrew L. Cherrington, MD, MPH
Donald R. Cowie, MD
Jan de Boer, MD, MS
Robert James DeBlasi, MD
Hope Feldman, CRNP, FNAP-BC
Hermes J. Flancu, MD, PhD, MPH*
Suneet Khashu, MD, PhD*
Melinda Marusik, ME&I, RD, CDE
Joshua L. Neumiller, PhD, CDE, FASCP*
Joseph Wallin, MB, BCH
*Subgroup leaders

ADA Staff
Erika Geibel Berg, PhD
(Corresponding author: eberg@diabetes.org)
Sheri Colberg-Orr, PhD
Alisa H. McAuliffe-Fogarty, PhD, OHPch
Sasha Urmier, REN, CDE
Robert S. Reiter, MD, FACP, FACI

Table 1: ADA evidence grading system for ‘Standards of Medical Care in Diabetes’

Level of evidence Description
A Clear evidence from well-conducted, generally unbiased randomized controlled trials (RCTs) that are internally valid, including:
- Meta analysis of RCTs to ensure internal validity
- Evidence from meta-analysis that involves high-quality, generally unbiased RCTs and is internally valid
- Evidence from well-conducted observational studies

B Supportive evidence from well-conducted cohort studies
- Evidence from well-conducted cross-sectional studies
- Evidence from high-quality, generally unbiased case-control studies

C Supportive evidence from poorly controlled or uncontrolled studies
- Evidence from observational studies of high potential for bias (such as case series with comparison with historical controls)
- Evidence from uncontrolled studies
- Evidence from expert opinion or clinical experience

Conducting evidence with the weight of evidence supporting the recommendation.
Updates in the SOC 2017

- The following presentation will focus on specific changes in each section of the Standards of Care 2017 compared to previous years.
- The full version of the Standards of Care 2017 can be downloaded at: Professional.diabetes.org/SOC

1. Promoting Health and Reducing Disparities in Populations

Care Delivery Systems

- 33-49% of patients still do not meet targets for A1C, blood pressure, or lipids.
- 14% meet targets for all A1C, BP, lipids, and nonsmoking status.
- Progress in CVD risk factor control is slowing.
- Substantial system-level improvements are needed.
- Delivery system is fragmented, lacks clinical information capabilities, duplicates services & is poorly designed.

Tailoring Treatment to Reduce Disparities

Key Recommendation
- Providers should assess social context, including potential food insecurity, housing stability, and financial barriers, and apply that information to treatment decisions. A

Health Disparities

- Ethnic/Cultural/Sex Differences
- Access to Health Care
  - Lack of Health Insurance
- Food Insecurity
- Language Barriers
- Homelessness

System-Level Interventions

Key Recommendations
- Patients should be referred to local community resources when available. B
- Patients should be provided with self-management support from lay health coaches, navigators, or community health workers when available. A
2. Classification and Diagnosis of Diabetes

- Screening with an informal assessment of risk factors or validated tools should be considered in asymptomatic adults. B
- Consider testing in asymptomatic adults of any age with BMI $\geq 25$ kg/m$^2$ or $\geq 23$ kg/m$^2$ in Asian Americans who have 1 or more add’l dm risk factors. B
- For all patients, testing should begin at age 45 years. B
- If tests are normal, repeat testing carried out at a minimum of 3-year intervals is reasonable. C

Recommendations: Screening for prediabetes/diabetes

- FPG, 2-h PG after 75-g OGTT, and the A1C are equally appropriate. B
- In patients with diabetes, identify and, if appropriate, treat other CVD risk factors. B
- Consider testing for T2DM in overweight/obese children and adolescents with 2 or more add’l diabetes risk factors. E

Risk factors for Prediabetes and T2D

- First-degree relative with diabetes
- High risk race/ethnicity (e.g., African American, Latino, Native American, Asian American, Pacific Islander)
- Women who were diagnosed with GDM
- History of CVD
- Hypertension (>140/90 mm Hg or on therapy for hypertension)
- HDL cholesterol level $<35$ mg/dL (0.9 mmol/L) and/or a triglyceride level $>250$ mg/dL (2.82 mmol/L)
- Women with polycystic ovary syndrome
- Physical inactivity
- Other clinical conditions associated with insulin resistance (e.g., severe obesity, sarcoidosis, nephropathy)

Criteria for Testing for T2DM in Children & Adolescents

- Overweight plus any 2:
  - Family history of type 2 diabetes in 1st or 2nd degree relative
  - Race/ethnicity
  - Signs of insulin resistance or conditions associated with insulin resistance
  - Maternal history of diabetes or GDM
- Age of initiation 10 years or at onset of puberty
- Frequency: every 3 years
- Test with FPG, OGTT, or A1C
3. Comprehensive Medical Evaluation and Assessment of Comorbidities

A complete medical evaluation should be performed at the initial visit to:
- Confirm & classify diagnosis
- Detect complications & potential comorbid conditions
- Review prior treatment & risk factor control
- Begin formulation of care management plan
- Develop a continuing care plan


Common Comorbidities

- Autoimmune Diseases (T1D)
- Cancer
- Cognitive Impairment Dementia
- Fatty Liver Disease
- Fractures
- Hearing Impairment
- HIV
- Low Testosterone (Men)
- Obstructive Sleep Apnea
- Periodontal Disease
- Psychosocial Disorders

Recommendation: Autoimmune Disease

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


Recommendation: Cognitive Dysfunction

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


Human Immunodeficiency Virus (HIV)

- 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. E
- If initial screening results are normal, checking fasting glucose every year is advised. E
- If prediabetes is detected, continue to measure fasting glucose levels every 3–6 months to monitor for progression to diabetes. E

Anxiety Disorders

• 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. Refer for treatment if anxiety is present. B
• Persons with hypoglycemic 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

Depression

• Consider annual screening with age-appropriate depression screening measures. B
• Beginning at dx 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 evidence-based treatment approaches. A

Disordered Eating Behavior

• Consider reevaluating the treatment regimen in people with diabetes who present with symptoms of disordered eating. B
• Consider screening for disordered eating using validated screening measures when hyperglycemia and weight loss are unexplained based on self-reported behaviors. B

Serious Mental Illness

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

Recommendations: Physical Activity

• Children with diabetes/prediabetes: at least 60 min/day physical activity B
• Most adults with type 1 C and type 2 B diabetes: 150+ min/wk of moderate-to-vigorous activity over at least 3 days/week with no more than 2 consecutive days without exercise. Shorter durations (minimum 75 min/week) of vigorous-intensity or interval training may be sufficient for younger and more physically fit individuals.
• Adults with type 1 C and type 2 B diabetes should perform resistance training in 2-3 sessions/week on nonconsecutive days
Recommendations: Physical Activity

• All adults, and particularly those with type 2 diabetes, should decrease the amount of time spent in daily sedentary behavior. B Prolonged sitting should be interrupted every 30 min for blood glucose benefits, particularly in adults with type 2 diabetes. C
• Flexibility training and balance training are recommended 2–3 times/week for older adults with diabetes. Yoga and tai chi may be included based on individual preferences to increase flexibility, muscular strength, and balance. C

American Diabetes Association Standards of Medical Care in Diabetes. Lifestyle Management. Diabetes Care 2017; 40 (Suppl. 1): S33-43

Recommendations: Psychosocial Care

• Psychosocial care should be provided to all people with diabetes, with the goals of optimizing health outcomes and QOL. A
• Psychosocial screening and follow-up include:
  • Attitudes
  • Expectations for medical mgmt. & outcomes
  • Affect/mood
  • Quality-of-life (QOL)
  • Resources- financial, social & emotional
  • Psychiatric history

American Diabetes Association Standards of Medical Care in Diabetes. Lifestyle Management. Diabetes Care 2017; 40 (Suppl. 1): S33-43

Recommendations: Psychosocial Care

• Providers should consider assessment for symptoms of diabetes distress, depression, anxiety, disordered eating, and cognitive capacities using patient-appropriate standardized and validated tools at the initial visit, at periodic intervals, and when there is a change in disease, treatment, or life circumstance. B
• Consider screening older adults (aged ≥65 years) with diabetes for cognitive impairment and depression. B

American Diabetes Association Standards of Medical Care in Diabetes. Lifestyle Management. Diabetes Care 2017; 40 (Suppl. 1): S33-43

Diabetes Distress

• Diabetes distress
  – Very common and distinct from other psychological disorders
  – Negative psychological reactions related to emotional burdens of managing a demanding chronic disease
• Recommendation: Routinely monitor people with diabetes for diabetes distress, particularly when treatment targets are not met and/or at the onset of diabetes complications. B

American Diabetes Association Standards of Medical Care in Diabetes. Lifestyle Management. Diabetes Care 2017; 40 (Suppl. 1): S33-43

Referral for Psychosocial Care

• Diabetes distress
  – Very common and distinct from other psychological disorders
  – Negative psychological reactions related to emotional burdens of managing a demanding chronic disease
• Recommendation: Routinely monitor people with diabetes for diabetes distress, particularly when treatment targets are not met and/or at the onset of diabetes complications. B

American Diabetes Association Standards of Medical Care in Diabetes. Lifestyle Management. Diabetes Care 2017; 40 (Suppl. 1): S33-43
**Recommendations: Prevention or Delay of T2DM**

- Patients with prediabetes should be referred to an intensive diet and physical activity behavioral counseling program adhering to the tenets of the DPP targeting a loss of 7% of body weight, and should increase their moderate physical activity to at least 150 min/week. 

**Based on cost-effectiveness of diabetes prevention, such programs should be covered by third-party payers.**

- Metformin therapy for prevention of type 2 diabetes should be considered in those with prediabetes, especially for those with BMI ≥35 kg/m², aged < 60 years, women with prior gestational diabetes (GDM), those with rising A1C despite lifestyle intervention.

**New Recommendation: Prevention or Delay of T2DM**

- Long-term use of metformin may be associated with biochemical vitamin B12 deficiency, and periodic measurement of vitamin B12 levels should be considered in metformin-treated patients, especially in those with anemia or peripheral neuropathy.

**Monitor at least annually for the development of diabetes in those with prediabetes.**

**Screening for and treatment of modifiable risk factors for CVD is suggested.**

**Recommendations: Prevention or Delay of T2DM**

- DSME and DSMS programs are appropriate for people with prediabetes to receive education and support to develop and maintain behaviors that can prevent or delay the onset of diabetes.

- Technology assisted tools can be useful elements of effective lifestyle modification to prevent diabetes.

**6. Glycemic Targets**
Classification of Hypoglycemia

<table>
<thead>
<tr>
<th>Level</th>
<th>Criteria</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severe hypoglycemia (level 3)</td>
<td>Blood glucose &lt; 54 mg/dL</td>
<td>Severe hypoglycemia associated with severe cognitive impairment requiring external assistance for recovery</td>
</tr>
<tr>
<td>Severe hypoglycemia (level 2)</td>
<td>Blood glucose &lt; 70 mg/dL</td>
<td>Severe hypoglycemia associated with instances requiring external assistance for recovery</td>
</tr>
<tr>
<td>Moderate hypoglycemia (level 1)</td>
<td>Blood glucose &lt; 80 mg/dL</td>
<td>Moderate hypoglycemia associated with instances not requiring external assistance</td>
</tr>
</tbody>
</table>

Recommendations: Hypoglycemia

- Individuals at risk for hypoglycemia should be asked about symptomatic and asymptomatic hypoglycemia at each encounter. C
- Glucose (15–20 g) preferred treatment for conscious individual with blood glucose ≤ 70 mg/dL. E
- Glucagon should be prescribed for those at increased risk of clinically significant hypoglycemia, defined as blood glucose ≤ 54 mg/dL, so it is available if needed. E
- Hypoglycemia unawareness or episodes of severe hypoglycemia should trigger treatment re-evaluation. E

7. Obesity Management for the Treatment of Type 2 Diabetes

Recommendations: Assessment

- At each patient encounter, BMI should be calculated and documented in the medical record. B
  - Discuss with the patient
  - Asian American cutpoints:
    - Normal: <23 BMI kg/m²
    - Overweight: 23.0 - 27.4 kg/m²
    - Obese: 27.5 - 37.4 kg/m²
    - Extremely obese: ≥ 37.5 kg/m²

Overweight/Obesity Treatment

<table>
<thead>
<tr>
<th>Body Mass Index Category (kg/m²)</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Diet, physical activity &amp; behavioral therapy</td>
</tr>
<tr>
<td></td>
<td>Pharmacotherapy</td>
</tr>
<tr>
<td></td>
<td>Metabolic surgery</td>
</tr>
</tbody>
</table>

* Asian-American individuals
† Treatment may be indicated for selected, motivated patients.

Metabolic Surgery

- Evidence supports gastrointestinal operations as effective treatments for overweight T2DM patients.
- Randomized controlled trials with postoperative follow-up ranging from 1 to 5 years have documented sustained diabetes remission in 30–63% of patients, though erosion of remission occurs in 35–50% or more.
- With or without diabetes relapse, the majority of patients who undergo surgery maintain substantial improvement of glycemic control for at least 5 to 15 years
**Recommendations: Metabolic Surgery**

- Metabolic surgery should be recommended to treat T2DM for all appropriate surgical candidates with BMIs ≥ 40 (37.5*) and those with BMIs 35-39.9 (32.5-37.4*) when hyperglycemia is inadequately controlled despite lifestyle & optimal medical therapy. **A**
- Metabolic surgery should be considered for the treatment of T2DM in adults with BMIs 30-34.9 (27.5-32.4*) when hyperglycemia is inadequately controlled despite optimal medical control by either oral or injectable medications (including insulin). **B**
- Metabolic surgery should be performed in high-volume centers with multidisciplinary teams that understand and are experienced in the management of diabetes and gastrointestinal surgery. **C**

**Adverse Effects**

- Costly
- Some associated risks
- Outcomes vary
- Patients undergoing metabolic surgery may be at higher risk for depression, substance abuse, and other psychosocial issues

**Recommendations: Pharmacologic Therapy For Type 1 Diabetes**

- Most people with T1DM should be treated with multiple daily injections of prandial insulin and basal insulin or continuous subcutaneous insulin infusion (CSII). **A**
- Individuals who have been successfully using CSII should have continued access after they turn 65 years old. **E**

**Recommendations: Pharmacologic Therapy For T2DM**

- Metformin, if not contraindicated and if tolerated, is the preferred initial pharmacologic agent for T2DM. **A**
- Consider insulin therapy (with or without additional agents) in patients with newly dx’d T2DM who are markedly symptomatic and/or have elevated blood glucose levels (>300 mg/dL) or A1C (>10%). **E**
Recommendations: Pharmacological Therapy For T2DM

- If noninsulin monotherapy at maximal tolerated dose does not achieve or maintain the A1C target over 3 months, add a second oral agent, a GLP-1 receptor agonist, or basal insulin. A
- Use a patient-centered approach to guide choice of pharmacologic agents. E
- Don’t delay insulin initiation in patients not achieving glycemic goals. B

Antihyperglycemic Therapy in T2DM

New Recommendation: Pharmacologic Therapy For T2DM

- In patients with long-standing suboptimally controlled type 2 diabetes and established atherosclerotic cardiovascular disease, empagliflozin or liraglutide should be considered as they have been shown to reduce cardiovascular and all-cause mortality when added to standard care. Ongoing studies are investigating the cardiovascular benefits of other agents in these drug classes. B
Average wholesale price (AWP) does not necessarily reflect discounts, rebates, or other price adjustments that may affect the actual cost incurred by the patient but highlights the importance of cost considerations.

There have been substantial increases in the price of insulin in the past decade, and cost-effectiveness is an important consideration.

9. Cardiovascular Disease and Risk Management

Cardiovascular Disease

- CVD is the leading cause of morbidity & mortality for those with diabetes.
- Largest contributor to direct/indirect costs
- Common conditions coexisting with type 2 diabetes (e.g., hypertension, dyslipidemia) are clear risk factors for ASCVD.
- Diabetes itself confers independent risk
- Control individual cardiovascular risk factors to prevent/slow CVD in people with diabetes.
- Systematically assess all patients with diabetes for cardiovascular risk factors.

Hypertension

- Common DM comorbidity
- Prevalence depends on diabetes type, age, BMI, ethnicity
- Major risk factor for ASCVD & microvascular complications
- In T1DM, HTN often results from underlying kidney disease.
- In T2DM, HTN coexists with other cardiometabolic risk factors.

Recommendations: Hypertension/ Blood Pressure Treatment

- Patients with BP >120/80 should be advised on lifestyle changes to reduce BP. B
- Patients with confirmed BP >140/90 should, in addition to lifestyle therapy, have prompt initiation and timely subsequent titration of pharmacological therapy to achieve blood pressure goals. A
Recommendations: Hypertension/ Blood Pressure Treatment

- Patients with confirmed office-based blood pressure >160/100mmHg 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 patients with diabetes. A
- Lifestyle intervention including:
  - Weight loss if overweight
  - DASH-style diet
  - Moderation of alcohol intake
  - Increased physical activity

American Diabetes Association Standards of Medical Care in Diabetes. Cardiovascular disease and risk management. Diabetes Care 2017; 40 (Suppl. 1): S75-S87

Recommendations: Hypertension/ Blood Pressure Treatment

- Treatment for hypertension should include A
  - ACE inhibitor
  - Angiotensin II receptor blocker (ARB)
  - Thiazide-like diuretic
  - Dihydropyridine calcium channel blockers
- Multiple drug therapy (two or more agents at maximal doses) generally required to achieve BP targets.

American Diabetes Association Standards of Medical Care in Diabetes. Cardiovascular disease and risk management. Diabetes Care 2017; 40 (Suppl. 1): S75-S87

Recommendations: Hypertension/ Blood Pressure Treatment

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

American Diabetes Association Standards of Medical Care in Diabetes. Cardiovascular disease and risk management. Diabetes Care 2017; 40 (Suppl. 1): S75-S87

Recommendations: Diabetic Retinopathy

- To reduce the risk or slow the progression of retinopathy
  - Optimize glycemic control A
  - Optimize blood pressure control A


Recommendations: Diabetic Retinopathy

- Initial dilated and comprehensive eye examination by an ophthalmologist or optometrist:
  - Adults with type 1 diabetes, within 5 years of diabetes onset. B
  - Patients with type 2 diabetes at the time of diabetes diagnosis. B


10. Microvascular Complications and Foot Care
Recommendations: Diabetic Retinopathy

Screening (2):
- If no evidence of retinopathy for one or more eye exam, exams every 2 years may be considered. B
- If diabetic retinopathy is present, subsequent examinations should be repeated at least annually by an ophthalmologist or optometrist. B
- If retinopathy is progressing or sight-threatening, more frequent exams required. B


Neuropathy

Early recognition & management is important because:
1. DN is a diagnosis of exclusion.
3. Up to 50% of DPN may be asymptomatic.
4. Recognition & treatment may improve symptoms, reduce sequelae, and improve quality-of-life.


Recommendations: Neuropathy

Screening:
- Assess all patients for DPN at dx for T2DM, 5 years after dx for T1DM, and at least annually thereafter. B
- Assessment should include history & 10g monofilament testing, vibration sensation (large-fiber function), and temperature or pinprick (small-fiber function) B
- Symptoms of autonomic neuropathy should be assessed in patients with microvascular & neuropathic complications. E


Recommendations: Neuropathy (2)

Treatment:
- Optimize glucose control to prevent or delay the development of neuropathy in patients with T1DM A & to slow progression in patients with T2DM. B
- Assess & treat patients to reduce pain related to DPN B and symptoms of autonomic neuropathy and to improve quality of life. E


New Recommendation: Neuropathy (3)

Treatment:
- Either pregabalin or duloxetine are recommended as initial pharmacologic treatments for neuropathic pain in diabetes. A


Recommendations: Foot Care

- Perform a comprehensive foot evaluation annually to identify risk factors for ulcers & amputations. B
- All patients with diabetes should have their feet inspected at every visit. C
- History should contain prior hx of ulceration, amputation, Charcot foot, angioplasty or vascular surgery, cigarette smoking, retinopathy & renal disease; and should assess current symptoms of neuropathy and vascular disease. B

11. Older Adults

Recommendations: Foot Care

• Exam should include inspection of the skin, assessment of foot deformities, neurologic assessment & vascular assessment including pulses in the legs and feet. B

Recommendations: Foot Care

• To perform the 10-g monofilament test, place the device perpendicular to the skin; Apply pressure until monofilament buckles.
• Hold in place for 1 second & release.
• The monofilament test should be performed at the highlighted sites while the patient’s eyes are closed.


Recommendations: Older Adults

• 26% of patients aged >65 have diabetes.
• Older adults have higher rates of premature death, functional disability & coexisting illnesses.
• At greater risk for polypharmacy, cognitive impairment, urinary incontinence, injurious falls & persistent pain.
• Screening for complications should be individualized and periodically revisited.
• At higher risk for depression


Recommendations: Older Adults

• Functional, cognitively intact older adults (≥65 years of age) with significant life expectancy should receive diabetes care using goals developed for younger adults. C
• Determine targets & therapeutic approaches by assessment of medical, functional, mental, and social geriatric domains for diabetes management. C

Glycemic goals for some older adults might be relaxed but hyperglycemia leading to symptoms or risk of acute hyperglycemic complications should be avoided in all patients. C
• Hypoglycemia should be avoided in older adults with diabetes. It should be screened for and managed by adjusting glycemic targets and pharmacologic interventions. B
Patients with DM in long-term care facilities need careful assessment to establish a glycemic goal & to make appropriate choices of glucose-lowering agents. E

Other CV risk factors should be treated in older adults with consideration of the time frame of benefit and the individual patient. E
- Treatment of HTN is indicated in most older adults C
- Lipid-lowering and aspirin therapy may benefit those with life expectancy at least equal to the time frame of primary or secondary prevention trials. E

Screening for geriatric syndromes may be appropriate in older adults with limitations in basic and instrumental activities of daily living. C

Older adults with DM should be considered a high-priority population for depression screening and treatment. B

Annual screening for early detection of mild cognitive impairment or dementia is indicated for adults 65 years of age or older. B

12. Children & Adolescents

¾ of all cases of T1DM are dx’d in patients <18 yrs. B

Providers must consider many unique aspects to care & mgmt. of children & adolescents with T1DM. B

Attention to family dynamics, developmental stages, physiological differences is essential. B

Recommendations less likely to be based on clinical trial evidence.

At diagnosis and during routine follow-up care, assess psychosocial issues and family stresses that could impact adherence to diabetes mgmt. Provide referrals to trained mental health professionals, preferably experienced in childhood diabetes. E

Encourage family involvement in diabetes mgmt. tasks for children & adolescents, as premature transfer of diabetes care can result in nonadherence and deterioration in glycemic control. B

Mental health professionals should be considered integral members of the pediatric diabetes multidisciplinary team. E
Adolescents should have time by themselves with their care provider(s) starting at age 12 years. Starting at puberty, preconception counseling should be incorporated into routine diabetes care for all girls of childbearing potential.

Type 1 Diabetes: Psychosocial Issues

Type 1 Diabetes: Glycemic Control

Blood glucose goal range

<table>
<thead>
<tr>
<th>Blood glucose goal range</th>
<th>A1C</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before meals</td>
<td>90–130 mg/dL (5.0–7.2 mmol/L)</td>
<td>&lt;7.5%</td>
</tr>
<tr>
<td>Bedtime/overnight</td>
<td>90–150 mg/dL (5.0–8.3 mmol/L)</td>
<td>A lower goal (&lt;7.0%) is reasonable if it can be achieved without excessive hypoglycemia</td>
</tr>
</tbody>
</table>

1. Goals should be individualized; lower goals may be reasonable.
2. Modify BG goals in youth w/ frequent hypos or hypoglycemia unawareness.

Type 2 Diabetes

Distinguishing between type 1 and type 2 can be challenging.

Diabetes-associated autoantibodies and ketosis may be present in patients with features of type 2 such as obesity and acanthosis nigricans.

Accurate diagnosis is critical.

Gestational Diabetes Mellitus (GDM)

Lifestyle change is an essential part GDM mgmt. and may suffice for many women. Add medications if needed to achieve glycemic targets.

Insulin is the preferred medication for treating hyperglycemia in GDM, as it does not cross the placenta. Metformin and glyburide may be used but both, particularly metformin, cross the placenta. All oral agents lack long-term safety data.

Metformin, when used to treat polycystic ovary syndrome and induce ovulation, need not be continued once pregnancy has been confirmed.
General Principles for Management of Diabetes in Pregnancy

- Potentially teratogenic medications (ACE inhibitors, statins, etc.) should be avoided in sexually active women of childbearing age who are not using reliable contraception. B
- Fasting and postprandial SMBG are recommended in both GDM and preexisting diabetes in pregnancy to achieve glycemic control. Some women with preexisting diabetes should also test blood glucose preprandially. B

American Diabetes Association. Standards of Medical Care in Diabetes Care in the Hospital. Diabetes Care 2017;40(suppl. 1):S120–S127

Glycemic Targets in Pregnancy

For women with gestational diabetes or preexisting type 1 or type 2 diabetes in pregnancy, the following targets are recommended:
- Fasting ≤95 mg/dL (5.3 mmol/L)
- One-hour postprandial ≤140 mg/dL (7.8 mmol/L) or
- Two-hour postprandial ≤120 mg/dL (6.7 mmol/L)

American Diabetes Association. Standards of Medical Care in Diabetes Care in the Hospital. Diabetes Care 2017;40(suppl. 1):S120–S127

Recommendations: Diabetes Care in the Hospital

- Basal insulin or basal + bolus correction regimen is the preferred treatment for noncritically ill patients with poor oral intake or those who are taking nothing by mouth. An insulin regimen with basal, nutritional & correction components is the preferred treatment for noncritically ill patients with good nutritional intake. A
- The sole use of sliding scale insulin in the inpatient hospital setting is strongly discouraged. A

American Diabetes Association. Standards of Medical Care in Diabetes Care in the Hospital. Diabetes Care 2017;40(suppl. 1):S120–S127

Thank you!

Email: rrastogi@jhmi.edu