Standards of Care

• Funded out 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.
- 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.diabetes.org/SOC
# Evidence Grading System

<table>
<thead>
<tr>
<th>Grade</th>
<th>Examples</th>
</tr>
</thead>
</table>
| A     | - Clear evidence from well-conducted, generalizable RCTs, that are adequately powered, including  
       - Evidence from a well-conducted multicenter trial or meta-analysis that incorporated quality ratings in the analysis;  
       - Compelling nonexperimental evidence;  
       - Supportive evidence from well-conducted RCTs that are adequately powered |
| B     | - Supportive evidence from a well-conducted cohort studies  
       - Supportive evidence from a well-conducted case-control study |
| C     | - Supportive evidence from poorly controlled or uncontrolled studies  
       - Conflicting evidence with the weight of evidence supporting the recommendation |
| E     | - Expert consensus or clinical experience |
1. Promoting Health and Reducing Disparities in Populations
Change the Care System

Changes that increase quality of care include:

1. Basing care on evidence-based guidelines
2. Expanding the role of teams to implement more intensive disease management strategies
3. Redesigning the care process
4. Implementing electronic health record tools
5. Activating and educating patients

6. Removing financial barriers and reducing patient out-of-pocket costs
7. Identifying community resources and public policy that supports healthy lifestyles
8. Coordinated primary care, e.g., through Patient-Centered Medical Home
9. Changes to reimbursement structure
Tailoring Treatment to Reduce Disparities

• Providers should assess social context, including potential food insecurity, housing stability, and financial barriers, and apply that information to treatment decisions. American Diabetes Association Standards of Medical Care in Diabetes. Promoting Health and Reducing Disparities in Populations. *Diabetes Care* 2017; 40 (Suppl. 1): S6-S10
Health Disparities

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

American Diabetes Association Standards of Medical Care in Diabetes. Promoting Health and Reducing Disparities in Populations. *Diabetes Care* 2017; 40 (Suppl. 1): S6-S10
System-Level Interventions

- 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 and Diagnosis

<table>
<thead>
<tr>
<th>A1C</th>
<th>Fasting Plasma Glucose</th>
<th>OGTT (2 hr. glucose)</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥6.5%</td>
<td>≥126 mg/dL (7 mmol/L)</td>
<td>≥200 mg/dL (11.1 mmol/L)</td>
</tr>
<tr>
<td>5.7–6.4%</td>
<td>100–125 mg/dL (5.6–6.9 mmol/L)</td>
<td>140–199 mg/dL (7.8–11.0 mmol/L)</td>
</tr>
<tr>
<td>&lt;5.6%</td>
<td>&lt;100 mg/dL (5.5 mmol/L)</td>
<td>&lt;140 mg/dL (7.7 mmol/L)</td>
</tr>
</tbody>
</table>

Blood glucose rather than A1C should be used to dx type 1 diabetes in symptomatic individuals. E

Screening for type 1 diabetes with an antibody panel is recommended only in the setting of a clinical research study or in a first-degree family members of a proband with type 1 diabetes. B

www.DiabetesTrialNet.org
Recommendations: Type 2 Diabetes

- Screening for type 2 diabetes 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 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

• In patients with diabetes and prediabetes, identify and, if appropriate, treat other CVD risk factors. B

• Consider screening for T2DM in overweight/obese children and adolescents with 2 or more add’l diabetes risk factors. E
Test for undiagnosed T2DM at the 1st prenatal visit in those with risk factors. B

Test for GDM at 24–28 weeks of gestation in women not previously known to have diabetes. A

Screen women with GDM for persistent diabetes at 4–12 weeks postpartum, using the OGTT. E

Women with GDM history should have lifelong screening for development of diabetes or prediabetes at least every 3 years. B

Women with GDM history found to have prediabetes should receive lifestyle interventions or metformin to prevent diabetes. A
3. Comprehensive Medical Evaluation and Assessment of Comorbidities
Patient-Centered Collaborative Care

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

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

- Confirm & classify diagnosis \( B \)
- Detect complications & potential comorbid conditions \( E \)
- Review prior treatment & risk factor control \( E \)
- Begin formulation of care management plan \( B \)
- Develop a continuing care plan \( B \)
Laboratory Evaluation

• A1C, if results not available within past 3 months

• If not performed/available within past year:
  – Fasting lipid profile
  – Liver function tests
  – Spot urinary albumin-to-creatinine ratio
  – Serum creatinine and eGFR
  – Thyroid-stimulating hormone in patients with type 1 diabetes

Recommendations: Immunizations

- Provide routine vaccinations for children and adults with diabetes per age-specific CDC recommendations. C
  - CDC.gov/vaccines

- Administer hepatitis B vaccine to unvaccinated adults with diabetes aged 19-59 years. C

- Consider administering hepatitis B vaccine to unvaccinated adults with diabetes ≥ 60 years old. C

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

4. Lifestyle Management
Recommendations: Diabetes Self-Management Education & Support

- All people with diabetes should participate in DSME and DSMS both at diagnosis and as needed thereafter. **B**
- Effective self-management, improved clinical outcomes, health status, and quality-of-life are key outcomes of DSME and DSMS and should be measured and monitored as part of care. **C**
- DSME/S should be patient-centered, respectful, and responsive to individual patient preferences, needs, and values that should guide clinical decisions. **A**

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

Four critical time points for DSME/S delivery:

1. At diagnosis
2. Annually for assessment of education, nutrition, and emotional needs
3. When new complicating factors arise that influence self-management; and
4. When transitions in care occur

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

1. Promote & support healthful eating patterns, emphasizing a variety of nutrient-dense foods in appropriate portion sizes, to improve health and to:
   - Achieve and maintain body weight goals
   - Attain individualized glycemic, blood pressure, and lipid goals
   - Delay or prevent complications of diabetes

2. Address nutrition needs based on personal & cultural preferences, health literacy & numeracy, access to healthful foods, willingness and ability to make behavioral changes & barriers to change.

American Diabetes Association Standards of Medical Care in Diabetes. Lifestyle Management. Diabetes Care 2017; 40 (Suppl. 1): S33-43
3. To maintain the pleasure of eating by providing non-judgmental messages about food choices.

4. Provide practical tools for developing healthful eating patterns rather than focusing on individual macronutrients, micro-nutrients, or single foods.
Recommendations: Physical Activity (1)

- 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

American Diabetes Association Standards of Medical Care in Diabetes. Lifestyle Management. Diabetes Care 2017; 40 (Suppl. 1): S33-43
Recommendations: Physical Activity (2)

- 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: Smoking Cessation

• Advise all patients not to use cigarettes, other tobacco products A or e-cigarettes E.

• Include smoking cessation counseling and other forms of treatment as a routine component of diabetes care. B
5. Glycemic Targets
Assessment of Glycemic Control

• Two primary techniques available for health providers and patients to assess effectiveness of management plan on glycemic control
  1. Patient self-monitoring of blood glucose (SMBG)
  2. A1C

• CGM or interstitial glucose may have an important role assessing the effectiveness and safety of treatment in selected patients.
Recommendations: Glucose Monitoring

- When prescribed as part of a broader educational context, SMBG results may be helpful to guide treatment decisions and/or patient self-management for patients using less frequent insulin injections B or noninsulin therapies. E

- When prescribing SMBG, ensure that patients receive ongoing instruction and regular evaluation of SMBG technique and SMBG results, and their ability to use SMBG data to adjust therapy. E

American Diabetes Association Standards of Medical Care in Diabetes. Glycemic targets. Diabetes Care 2017; 40 (Suppl. 1): S48-S56
Recommendations: A1C Testing

• Perform the A1C test at least 2x annually in patients that meet treatment goals (and have stable glycemic control). E

• Perform the A1C test *quarterly* in patients whose therapy has changed or who are not meeting glycemic goals. E

• Use of point-of-care (POC) testing for A1C provides the opportunity for more timely treatment changes. E

American Diabetes Association Standards of Medical Care in Diabetes. Glycemic targets. Diabetes Care 2017; 40 (Suppl. 1): S48-S56
Approach to the Management of Hyperglycemia

Patient/Disease Features

- Risk of hypoglycemia/drug adverse effects
- Disease Duration
- Life expectancy
- Relevant comorbidities
- Established vascular complications
- Patient attitude & expected treatment efforts
- Resources & support system

A1C 7%

- more stringent
- A1C 7%
- less stringent

- low
- newly diagnosed
- long-standing
- long
- short
- absent
- Few/mild
- severe
- absent
- Few/mild
- severe
- highly motivated, adherent, excellent self-care capabilities
- less motivated, nonadherent, poor self-care capabilities
- readily available
- limited

American Diabetes Association Standards of Medical Care in Diabetes. Glycemic targets. Diabetes Care 2017; 40 (Suppl. 1): S48-S56
<table>
<thead>
<tr>
<th></th>
<th><strong>&lt;7.0%</strong>*</th>
<th><em>(&lt;53 mmol/mol)</em></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A1C</strong></td>
<td><strong>&lt;7.0%</strong>*</td>
<td><em>(&lt;53 mmol/mol)</em></td>
</tr>
<tr>
<td>Preprandial capillary</td>
<td><strong>80–130 mg/dL</strong>*</td>
<td><em>(4.4–7.2 mmol/L)</em></td>
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<tr>
<td>plasma glucose</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peak postprandial</td>
<td><strong>&lt;180 mg/dL</strong>*</td>
<td><em>(&lt;10.0 mmol/L)</em></td>
</tr>
<tr>
<td>capillary plasma</td>
<td></td>
<td></td>
</tr>
<tr>
<td>glucose†</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Goals should be individualized.
† Postprandial glucose measurements should be made 1–2 hours after the beginning of the meal.

American Diabetes Association Standards of Medical Care in Diabetes. Glycemic targets. Diabetes Care 2017; 40 (Suppl. 1): S48-S56
Glycemic Recommendations for Nonpregnant Adults with Diabetes

• More or less stringent glycemic goals may be appropriate for individual patients.

• Postprandial glucose may be targeted if A1C goals are not met despite reaching preprandial glucose goals.

American Diabetes Association Standards of Medical Care in Diabetes.
Glycemic targets. Diabetes Care 2017; 40 (Suppl. 1): S48-S56
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 $\leq 70$ 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

American Diabetes Association Standards of Medical Care in Diabetes. Glycemic targets. Diabetes Care 2017; 40 (Suppl. 1): S48-S56
Recommendations: Hypoglycemia (2)

• Insulin-treated patients with hypoglycemia unawareness or an episode of severe hypoglycemia should be advised to raise glycemic targets to strictly avoid further hypoglycemia for at least several weeks, to partially reverse hypoglycemia unawareness, and to reduce risk of future episodes. A

• Ongoing assessment of cognitive function is suggested with increased vigilance for hypoglycemia by the clinician, patient, and caregivers if low cognition and/or declining cognition is found. B

American Diabetes Association Standards of Medical Care in Diabetes. Glycemic targets. Diabetes Care 2017; 40 (Suppl. 1): S48-S56
6. Obesity Management for the Treatment of Type 2 Diabetes
Overweight/Obesity Treatment

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Body Mass Index Category (kg/m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>23.0* or 25.0-26.9</td>
</tr>
<tr>
<td>Diet, physical activity &amp; behavioral therapy</td>
<td>✫</td>
</tr>
<tr>
<td>Pharmacotherapy</td>
<td>✫</td>
</tr>
<tr>
<td>Metabolic surgery</td>
<td>✫</td>
</tr>
</tbody>
</table>

* Asian-American individuals

+ Treatment may be indicated for selected, motivated patients.

Recommendations: Diet, physical activity & behavioral therapy

• Diet, physical activity & behavioral therapy designed to achieve >5% weight loss should be prescribed for overweight & obese patients with T2DM ready to achieve weight loss. A

• Interventions should be high-intensity (≥16 sessions in 6 months) and focus on diet, physical activity & behavioral strategies to achieve a 500 - 750 kcal/day energy deficit. A
Recommendations: Diet, physical activity & behavioral therapy

- Short-term (3-month) interventions that employ very low calorie diets (<800 kcal/day) and total meal replacements may be prescribed for select patients by trained practitioners with close medical monitoring. To maintain weight loss, such programs must incorporate long-term, comprehensive, weight maintenance counseling. B

Recommendations: Pharmacotherapy

• Consider impact on weight when choosing glucose-lowering meds for overweight or obese patients. E

• Minimize the medications for comorbid conditions that are associated with weight gain. E

• Weight loss meds may be effective adjuncts to diet, physical activity & behavioral counseling for select patients. A

Recommendations: Pharmacotherapy

• If patient response to weight loss medications <5% after 3 months or there are safety or tolerability issues at any time, discontinue medication and consider alternative medications or treatment approaches. A

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 $\geq 40$ (37.5*) and those with BMIs 35.0-39.9 (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

Recommendations: Metabolic Surgery (2)

- Long-term lifestyle support and routine monitoring of micronutrient/nutritional status must be provided after surgery. C
- People presenting for metabolic surgery should receive a comprehensive mental health assessment. B Surgery should be postponed in patients with histories of alcohol or substance abuse, significant depression, suicidal ideation, or other mental health conditions until these conditions have been fully addressed. E
- People who undergo metabolic surgery should be evaluated to assess the need for ongoing mental health services to help them adjust to medical and psychosocial changes after 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
7. Children & Adolescents
Recommendations: Transition from Pediatric to Adult Care

- Health care providers and families should begin to prepare youth in early to mid-adolescence and, at the latest, at least 1 year before the transition to adult health care. E

- Both pediatricians and adult health care providers should assist in providing support and links to resources for the teen and emerging adult. B

American Diabetes Association Standards of Medical Care in Diabetes. Children and adolescents. *Diabetes Care* 2017; 40 (Suppl. 1): S105-S113
Recommendations: Transition from Pediatric to Adult Care (2)

- Early & ongoing attention should be given to comprehensive coordinated planning for seamless transition of all youth to adult health care.

- Association position statement, “Diabetes Care for Emerging Adults”

- NDEP: http://ndep.nih.gov/transitions
8. Management of Diabetes in Pregnancy
Preexisting Diabetes

• Starting at puberty, preconception counseling should be incorporated into routine diabetes care for all girls of childbearing potential. A

• Family planning should be discussed and effective contraception should be prescribed and used until a woman is prepared and ready to become pregnant. A
Preexisting Diabetes (2)

• Provide preconception counseling that addresses the importance of glycemic control as close to normal as safely possible, ideally <6.5%, to reduce the risk of congenital anomalies. B

Preexisting Diabetes (3)

• Women w/ preexisting type 1 or type 2 diabetes who are pregnant or planning to become pregnant should be counseled on the risk of development and/or progression of diabetic retinopathy. Eye exams should occur before pregnancy or in the first trimester & then be monitored every trimester and for 1 year postpartum as indicated by degree of retinopathy. B

9. Diabetes Care in the Hospital
Recommendations: Diabetes Care in the Hospital

- Perform an A1C for all patients with diabetes or hyperglycemia admitted to the hospital if not performed in the prior 3 months. B

- Insulin therapy should be initiated for treatment of persistent hyperglycemia starting at a threshold ≥180 mg/dL. Then a target glucose of 140–180 mg/dL is recommended for the majority of critically ill A and noncritically ill patients. C

Recommendations: Diabetes Care in the Hospital (2)

• More stringent goals, such as <140 mg/dL (mmol/L) may be appropriate for selected critically ill patients, if achievable without significant hypoglycemia. C

• Intravenous insulin infusions should be administered using validated written or computerized protocols that allow for predefined adjustments in the infusion rate based on glycemic fluctuations and insulin dose. E
Recommendations: Diabetes Care in the Hospital (3)

- 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
Recommendations: Diabetes Care in the Hospital (4)

- A hypoglycemia management protocol should be adopted and implemented by each hospital or hospital system. E
- A plan for preventing and treating hypoglycemia should be established for each patient. E
- Episodes of hypoglycemia in the hospital should be documented in the medical record and tracked. E
Recommendations: Diabetes Care in the Hospital (5)

• A hypoglycemia management protocol should be adopted and implemented by each hospital or hospital system. A plan for preventing and treating hypoglycemia should be established for each patient. Episodes of hypoglycemia in the hospital should be documented in the medical record and tracked. E

Recommendations: Diabetes Care in the Hospital (6)

- The treatment regimen should be reviewed and changed if necessary to prevent further hypoglycemia when a blood glucose value is <70 mg/dL (3.9 mmol/L). C

- There should be a structured discharge plan tailored to the individual patient. B
Helpful Resources
Guidelines

• Full version
• Abridged version for PCPs
• Free app
• Pocket cards with key figures
• Free webcast for continuing education credit

Professional.Diabetes.org/SOC
Professional Education
• Live programs
• Online self-assessment programs
• Online webcasts
Professional.Diabetes.org/CE
Diabetes Self-Management Education

• Find a recognized Diabetes Self-Management program
• Become a recognized DSME program
• Tools and resources for DSME programs
• Online education documentation tools

Professional.Diabetes.org/ERP
• Journals
• Meeting, book and journal discounts
• Career center
• Quarterly member newsletter

Professional.Diabetes.org/membership