



# Summary of Revisions: *Standards of Medical Care in Diabetes—2021*

American Diabetes Association

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## GENERAL CHANGES

The field of diabetes care is rapidly changing as new research, technology, and treatments that can improve the health and well-being of people with diabetes continue to emerge. With annual updates since 1989, the American Diabetes Association (ADA) has long been a leader in producing guidelines that capture the most current state of the field.

*Although levels of evidence for several recommendations have been updated, these changes are not outlined below where the clinical recommendation has remained the same. That is, changes in evidence level from, for example, E to C are not noted below. The 2021 Standards of Care contains, in addition to many minor changes that clarify recommendations or reflect new evidence, the following more substantive revisions.*

## SECTION CHANGES

### Section 1. Improving Care and Promoting Health in Populations

(<https://doi.org/10.2337/dc21-S001>)

Additional information has been included on social determinants of health in diabetes to reflect the evidence presented in “Social Determinants of Health in Diabetes: A Scientific Review,” (<https://doi.org/10.2337/dci20-0053>), including a change to Recommendation 1.5.

The concept of “cost-related medication nonadherence” has been added to the “Cost Considerations” subsection.

### Section 2. Classification and Diagnosis of Diabetes

(<https://doi.org/10.2337/dc21-S002>)

More discussion about use of the term LADA (latent autoimmune diabetes in adults) has been added to the section.

Guidance on use of point-of-care A1C assays for the diagnosis of diabetes has been clarified.

A recommendation about screening for diabetes and prediabetes in patients with HIV (Recommendation 2.14), as well as the in-text discussion on the topic, has been moved to this section. This content was previously in Section 4 “Comprehensive Medical Evaluation and Assessment of Comorbidities” (<https://doi.org/10.2337/dc21-S004>).

Additional evidence has been added to the subsection “Cystic Fibrosis–Related Diabetes” (CFRD) regarding early diagnosis and treatment of CFRD and reported increases in CFRD.

Additional evidence has also been added to the “Posttransplantation Diabetes Mellitus” subsection.

### Section 3. Prevention or Delay of Type 2 Diabetes

(<https://doi.org/10.2337/dc21-S003>)

A new subsection, “Delivery and Dissemination of Lifestyle Behavior Change for Diabetes Prevention,” was created to describe evidence for broader dissemination of and national efforts for lifestyle behavior change programs to prevent diabetes.

Additional guidance and evidence have been added to the newly named

“Prevention of Vascular Disease and Mortality” subsection (previously called “Prevention of Cardiovascular Disease”) and include data from longer-term follow up diabetes prevention studies.

### Section 4. Comprehensive Medical Evaluation and Assessment of Comorbidities

(<https://doi.org/10.2337/dc21-S004>)

Regarding ongoing management, Recommendation 4.5 has been modified to include overall health status, risk of hypoglycemia, and cardiovascular risk using the risk calculator. Recommendation 4.6 was eliminated.

The “Immunizations” subsection has been significantly revised, and vaccine-specific recommendations were removed. **Table 4.5** was added containing Centers for Disease Control and Prevention–recommended vaccinations for people with diabetes. More information has been added to the discussion of each vaccine, including important considerations related to coronavirus disease 2019 (COVID-19).

The recommendation on pancreatitis was removed because the guidance is more appropriately covered in the discussion of the evidence in the subsection text.

Additional evidence on hearing impairment has been added to the “Sensory Impairment” subsection, and audiology has been added as a consideration to the table on referrals for initial care management (**Table 4.4**).

The HIV recommendation and discussion were removed from this section and can now be found in Section 2 “Classification

and Diagnosis of Diabetes” (<https://doi.org/10.2337/dc21-S002>).

More information on determining testosterone levels has been added to the “Low Testosterone in Men” subsection, and readers are now referred to the Endocrine Society Clinical Practice Guideline (<https://doi.org/10.1210/jc.2018-00229>) for more detailed recommendations.

**Table 4.1**, “Components of the Comprehensive Diabetes Medical Evaluation at Initial, Follow-up, and Annual Visits,” was reorganized and revised to include a number of additional factors, including social determinants of health and identification of surrogate decision maker and advanced care plan.

### Section 5. Facilitating Behavior Change and Well-being to Improve Health Outcomes

(<https://doi.org/10.2337/dc21-S005>)

Based on “Diabetes Self-management Education and Support in Adults With Type 2 Diabetes: A Consensus Report of the American Diabetes Association, the Association of Diabetes Care & Education Specialists, the Academy of Nutrition and Dietetics, the American Academy of Family Physicians, the American Academy of PAs, the American Association of Nurse Practitioners, and the American Pharmacists Association,” published in June 2020 (<https://doi.org/10.2337/dci20-0023>), Recommendations 5.6 and 5.7 regarding barriers to diabetes self-management education and support (DSMES) have been added. The four critical times DSMES needs should be evaluated have been revised based on the consensus report. Additional evidence on the usefulness of DSMES and ways to address barriers has been included.

The “Carbohydrates” and “Fats” subsections have been revised to include additional guidance and studies related to these macronutrients.

Recommendation 5.29 has been added to the “Physical Activity” subsection to address baseline physical activity and sedentary time and to encourage the promotion of nonsedentary activities above baseline for sedentary individuals with diabetes.

Recommendation 5.34 has been added for smoking cessation, which can be addressed as part of diabetes education programs.

The concept of mindful self-compassion has been added to the “Diabetes Distress” subsection, discussing its effects on diabetes.

### Section 6. Glycemic Targets

(<https://doi.org/10.2337/dc21-S006>)

The “A1C” subsection was retitled “Glycemic Assessment,” with respective changes to Recommendations 6.1 and 6.2 to allow for other glycemic measures aside from A1C.

Recommendation 6.3 was removed.

The “Glycemic Goals” subsection has also been revised to include other glycemic measures, and the recommendation for glycemic goals for many nonpregnant adults without significant hypoglycemia has been divided in two parts (Recommendations 6.5a and 6.5b) to include time-in-range goals.

**Figure 6.1** has been revised and no longer includes example patient-specific data.

More discussion has been added to the “A1C and Microvascular Complications” subsection.

Recommendation 6.9 regarding hypoglycemia assessment has been revised and now recommends that occurrence of and risk for hypoglycemia should be reviewed at every encounter and investigated as indicated.

### Section 7. Diabetes Technology

(<https://doi.org/10.2337/dc21-S007>)

Recommendations 7.9–7.13 in the “Continuous Glucose Monitoring Devices” subsection have been revised, and “blinded” continuous glucose monitoring (CGM) is now referred to as “professional CGM,” which is clinic-based and can include blinded and real-time devices. **Table 7.3** has been updated to reflect this change as well. Recommendations 7.9–7.11 now recommend CGM as useful for people with diabetes on multiple daily injections and continuous subcutaneous insulin infusions and other forms of insulin therapy (with different levels of evidence) not defined by type of diabetes or age.

Recommendation 7.14 regarding skin reactions with use of CGM has been added. This section has also been updated to include information on the evolving evidence and a new discussion on education and training.

The “Insulin Delivery” subsection has also been revised, and the recommendation on examination of insulin injection/infusion site was removed.

Recommendation 7.27 regarding inpatient use of devices was moved to later in the section where use in the inpatient setting is more fully discussed. The use of CGM in the hospital during the COVID-19 pandemic is also reviewed in the “Inpatient Care” subsection.

Recommendation 7.21 on insulin pump use for people with type 2 diabetes and other forms of diabetes with multiple daily injections has been added to the “Insulin Pumps” subsection, with additional discussion. Information on insulin pump use in older adults has been added as well.

The possible benefit of systems that combine technology and online coaching has been added to Recommendation 7.26.

### Section 8. Obesity Management for the Treatment of Type 2 Diabetes

(<https://doi.org/10.2337/dc21-S008>)

The concept of patient-centered communication that uses nonjudgmental language has been added as Recommendation 8.1, with additional discussion in the “Assessment” subsection. The subsection on “Diet, Physical Activity, and Behavioral Therapy” has been updated, including more thorough discussion of health outcomes of weight loss. Based on the publication “Social Determinants of Health in Diabetes: A Scientific Review” (<https://doi.org/10.2337/dci20-0053>), considerations related to social determinants of health have been added in this subsection as well.

More detail has been added to the “Pharmacotherapy” subsection, particularly focused on assessing efficacy and safety.

### Section 9. Pharmacologic Approaches to Glycemic Treatment

(<https://doi.org/10.2337/dc21-S009>)

Additional evidence has been added to the discussion of use of sensor-augmented insulin pumps.

The concept that improved technologies and treatments would require reconsideration of the role of pancreas and islet transplantation has been removed.

Recommendation 9.13 and the related discussion have been added cautioning providers of the potential for overbasalization with insulin therapy.

**Table 9.1** has been updated.

**Figure 9.1** has been revised to include a dedicated decision pathway for chronic kidney disease and a dedicated decision pathway for heart failure, with updates to reflect consensus interpretation of clinical trial data.

**Figure 9.2** has also been revised to include assessment of adequacy of insulin dose and updates in regard to the use of glucagon-like peptide 1 receptor agonists.

### Section 10. Cardiovascular Disease and Risk Management

(<https://doi.org/10.2337/dc21-S010>)

This section is endorsed for the third consecutive year by the American College of Cardiology.

The section has been revised to acknowledge that few trials have been specifically designed to assess the impact of cardiovascular risk reduction strategies in patients with type 1 diabetes.

A lower limit has been added to Recommendation 10.6 regarding pregnant patients with diabetes and preexisting hypertension.

ACE inhibitors or angiotensin receptor blockers as first-line therapy for hypertension in people with diabetes and coronary artery disease has been added as Recommendation 10.10, with additional discussion.

The ODYSSEY OUTCOMES trial has been added to the “Combination Therapy for LDL Cholesterol Lowering” subsection.

Recommendations 10.37 and 10.38 have been added to the “Antiplatelet Agents” subsection regarding long-term dual antiplatelet therapy and combination therapy with aspirin plus low dose rivaroxaban, respectively. New evidence from THEMIS, THEMIS-PCI, COMPASS, and VOYAGER PAD has also been added to the “Antiplatelet Agents” subsection.

Recommendations 10.43–10.47 regarding treatment in the “Cardiovascular Disease” subsection have been revised to include the evolving evidence from cardiovascular outcomes trials.

**Table 10.3A** is now titled “Cardiovascular and Cardiorenal Outcomes Trials of Available Antihyperglycemic Medications Completed After the Issuance of the FDA 2008 Guidelines: DPP-4 Inhibitors,” and the CAROLINA trial has been added.

**Table 10.3B** is now titled “Cardiovascular and Cardiorenal Outcomes Trials of Available Antihyperglycemic Medications Completed After the Issuance of the FDA 2008 Guidelines: GLP-1 Receptor Agonists,” and the PIONEER-6 trial has been added.

**Table 10.3C** is now titled “Cardiovascular and Cardiorenal Outcomes Trials of Available Antihyperglycemic Medications Completed After the Issuance of the FDA 2008 Guidelines: SGLT2 Inhibitors,” and the CREDENCE and DAPA-HF trials have been added.

### Section 11. Microvascular Complications and Foot Care

(<https://doi.org/10.2337/dc21-S011>)

Recommendation 11.3 on treatment for chronic kidney disease has been divided

into three recommendations (11.3a, 11.3b, and 11.3c) to individualize treatment based on renal function and risk of cardiovascular disease.

### Section 12. Older Adults

(<https://doi.org/10.2337/dc21-S012>)

Recommendations 12.4 and 12.5 and discussion in the “Hypoglycemia” subsection have been modified, and a new recommendation on the use of continuous glucose monitoring for the reduction of hypoglycemia has been added based on findings from the Wireless Innovation in Seniors with Diabetes Mellitus (WISDM) trial.

The reasonable A1C goal for older adults who are otherwise healthy with few coexisting chronic illnesses and intact cognitive function and functional status has been modified to A1C <7.0–7.5% (53–58 mmol/mol). This change is reflected in **Table 12.1** as well. Fasting or preprandial and bedtime glucose levels for healthy older adults have also been revised in this table.

Recommendation 12.12 and accompanying review of the evidence on weight loss has been added to the “Lifestyle Management” subsection.

In the “Pharmacologic Therapy” subsection, for the very complex older patient in poor health in **Table 12.2**, avoiding reliance on A1C and avoiding hypoglycemia and symptomatic hyperglycemia were added as a reasonable A1C/treatment goal.

The example treatment goal for older adults who are otherwise healthy with few coexisting chronic illnesses and intact cognitive function and functional status has been modified to A1C <7.0–7.5% (53–58 mmol/mol).

Additional considerations and discussion of findings have been added to the “Incretin-based Therapies” and “Sodium–Glucose Cotransporter 2 Inhibitors” subsections.

### Section 13. Children and Adolescents

(<https://doi.org/10.2337/dc21-S013>)

To incorporate social determinants of health, a new recommendation on assessment of food security, housing stability/homelessness, health literacy, financial barriers, and social/community support and its application to treatment decisions has been added to the type 1 (Recommendation 13.12) and type 2 diabetes (Recommendation 13.105) sections.

Three new recommendations, one on real-time CGM (Recommendation 13.20),

one on intermittently scanned CGM (Recommendation 13.21), and another on use of CGM metrics from the most recent 14 days (Recommendation 13.27), have been added to the type 1 diabetes “Glycemic Control” subsection.

For physical activity in youth with pre-diabetes and type 2 diabetes, Recommendation 13.58 has been changed to at least 60 min daily, with bone and muscle strength training at least 3 days per week.

**Figure 13.1** has been revised to better represent current guidance for management of new-onset diabetes in youth with overweight or obesity with clinical suspicion of type 2 diabetes.

### Section 14. Management of Diabetes in Pregnancy

(<https://doi.org/10.2337/dc21-S014>)

The information on insulin requirements during pregnancy in the “Insulin Physiology” subsection has been clarified.

Lower limits have been added to the recommended glycemic targets for type 1 and type 2 diabetes in pregnancy, though they do not apply to diet-controlled type 2 diabetes in pregnancy.

More information on CGM in pregnancy, specifically on time in range and target ranges for women with type 1 diabetes in pregnancy, has been added.

The guidance on use of hybrid closed-loop systems during pregnancy has been updated with new considerations.

Recommendation 14.18 and narrative in the “Preeclampsia and Aspirin” subsection have been revised to include more information on aspirin dosing and the insufficient data available on its use for pregnant women with preexisting diabetes.

A lower limit has been added to Recommendation 14.19 regarding pregnant patients with diabetes and chronic hypertension.

### Section 15. Diabetes Care in the Hospital

(<https://doi.org/10.2337/dc21-S015>)

Additional information has been added on enteral and parenteral feeding and insulin requirements.

The “Glucocorticoid Therapy” subsection has been revised to include more guidance on use of NPH insulin with steroids.

### Section 16. Diabetes Advocacy

(<https://doi.org/10.2337/dc21-S016>)

No changes have been made to this section.