



Summary of Revisions: *Standards of Medical Care in Diabetes—2022*

American Diabetes Association
Professional Practice Committee*

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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 2022 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/dc22-S001>)

Additional information has been included on online platforms to support behavior change and well-being. The renamed “Cost Considerations for Medication-Taking Behaviors” subsection has been expanded to include more discussion about costs of medications and treatment goals.

The concept of health numeracy and its role in diabetes prevention and management was added to the newly

named “Health Literacy and Numeracy” subsection.

The community health workers content was expanded.

Section 2. Classification and Diagnosis of Diabetes

(<https://doi.org/10.2337/dc22-S002>)

A recommendation about adequate carbohydrate intake prior to oral glucose tolerance testing as a screen for diabetes was added, with supportive references added to the text (Recommendations 2.4 and 2.12).

The discussion regarding use of point-of-care A1C assays for the diagnosis of diabetes has been revised.

More information has been added to the “Race/Ethnicity/Hemoglobinopathies” subsection.

The “Type 1 Diabetes” subsection and the recommendations within have been updated based on the publication of “The Management of Type 1 Diabetes in Adults. A Consensus Report by the American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD)” (<https://doi.org/10.2337/dci21-0043>).

Under “Classification,” immune checkpoint inhibitors have been added as a cause of medication-induced diabetes. Additional evidence and discussion have been added to the subsection “Screening for Type 1 Diabetes Risk.”

Recommendation 2.9 has been revised to recommend that, for all people,

screening for prediabetes and diabetes should begin at age 35 years.

Recommendation 2.24 regarding genetic testing for those who do not have typical characteristics of type 1 or type 2 diabetes has been revised based on the publication of “The Management of Type 1 Diabetes in Adults. A Consensus Report by the American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD)” (<https://doi.org/10.2337/dci21-0043>).

The gestational diabetes mellitus recommendations have been revised with changes made regarding preconception and early pregnancy screening for diabetes and abnormal glucose metabolism, with supporting evidence added to the text.

Section 3. Prevention or Delay of Type 2 Diabetes and Associated Comorbidities

(<https://doi.org/10.2337/dc22-S003>)

The title has been changed to “Prevention or Delay of Type 2 Diabetes and Associated Comorbidities.”

Recommendation 3.1 has been modified to better individualize monitoring for the development of type 2 diabetes in those with prediabetes.

Adults with overweight/obesity are recommended to be referred to an intensive lifestyle behavior change program (Recommendation 3.2).

Additional considerations have been added to the recommendation regarding

*A complete list of members of the American Diabetes Association Professional Practice Committee can be found at <https://doi.org/10.2337/dc22-SPPC>.

metformin therapy (Recommendation 3.6).

More discussion was added on vitamin D supplementation in the “Pharmacologic Interventions” subsection.

There is a new subsection and recommendation on patient-centered care aimed at weight loss or prevention of weight gain, minimizing progression of hyperglycemia, and attention to cardiovascular risk and associated comorbidities.

Section 4. Comprehensive Medical Evaluation and Assessment of Comorbidities

(<https://doi.org/10.2337/dc22-S004>)

The “Immunizations” subsection has been revised, and more information and evidence on the influenza vaccine for people with diabetes and cardiovascular disease has been added to the “Influenza” subsection. Within this subsection, coronavirus disease 2019 (COVID-19) vaccination information has been added based on evolving evidence.

Table 4.6, management of patients with nonalcoholic fatty liver disease (NAFLD) and nonalcoholic steatohepatitis (NASH), and **Table 4.7**, summary of published NAFLD guidelines, reproduced from “Preparing for the NASH Epidemic: A Call to Action” (<https://doi.org/10.2337/dci21-0020>), provide more information on how to manage these diseases. Developed following an American Gastroenterological Association conference on the burden, screening, risk stratification, diagnosis, and management of individuals with NAFLD, the Call to Action informed other revisions to the “Nonalcoholic Fatty Liver Disease” subsection.

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

(<https://doi.org/10.2337/dc22-S005>)

Recommendation 5.5 has been added to the “Diabetes Self-Management Education and Support” subsection to address digital coaching and digital self-management interviews as effective methods of education and support.

In the “Carbohydrates” subsection, more emphasis has been placed on the quality of carbohydrates selected. In Recommendation 5.15, a fiber goal has been added for additional clarity. Evidence on consumption of mixed meals, insulin

dosing, and impact on glycemia has also been added to this subsection.

A new subsection on cognitive capacity/impairment has been added, with recommendations for monitoring (Recommendation 5.51) and referral (Recommendation 5.52) for formal assessment, and a discussion of the evidence regarding cognitive impairment and diabetes.

Section 6. Glycemic Targets

(<https://doi.org/10.2337/dc22-S006>)

Time in range has been more fully incorporated into the “Glycemic Assessment” subsection.

Time in range thresholds were removed from Recommendation 6.4, and the reader is directed to **Table 6.2** for those values.

Glucose variability and the association of hypoglycemia was added to the “Hypoglycemia” subsection, as well as information on hypoglycemia prevention, including the Blood Glucose Awareness Training, Dose Adjusted for Normal Eating (DAFNE), and DAFNEplus programs.

Section 7. Diabetes Technology

(<https://doi.org/10.2337/dc22-S007>)

General recommendations on the selection of technology based on individual and caregiver preferences (Recommendation 7.1), ongoing education on use of devices (Recommendation 7.2), continued access to devices across payers (Recommendation 7.3), support of students using devices in school settings (Recommendation 7.4), and early initiation of technology (Recommendation 7.5) now introduce the technology section, when previously these concepts were distributed throughout the section.

“Self-monitoring of blood glucose (SMBG)” was replaced with the more commonly used “blood glucose monitoring (BGM)” throughout, and more information based on the U.S. Food and Drug Administration recommendation regarding when an individual might need access to BGM was added to the “Blood Glucose Monitoring” subsection.

The recommendations regarding use of continuous glucose monitoring (CGM) were divided between adults (Recommendations 7.11 and 7.12) and youth (Recommendations 7.13 and 7.14), and the recommendation regarding periodic use of CGM or the use of professional CGM has been simplified (Recommendation 7.17).

Frequency of sensor use has also been added to the text of the “Continuous Glucose Monitoring Devices” subsection, as well as a restructuring of the text in this section based on study design.

“Smart pens” are now referred to as “connected insulin pens,” and more discussion and evidence has been added to the insulin pens content.

The discussion of automated insulin delivery (AID) systems has been combined with the insulin pumps subsection and is separate from the “Do-It-Yourself Closed-Loop Systems” subsection.

Recommendation 7.29 has been modified to include outpatient procedures and the consideration that people should be allowed continued use of diabetes devices during inpatient or outpatient procedures when they can safely use them and supervision is available.

Section 8. Obesity and Weight Management for the Prevention and Treatment of Type 2 Diabetes

(<https://doi.org/10.2337/dc22-S008>)

The title has been changed to “Obesity and Weight Management for the Prevention and Treatment of Type 2 Diabetes.”

Evidence has been added regarding the importance of addressing obesity, as both obesity and diabetes increase risk for more severe COVID-19 infections.

The concept of weight distribution and weight gain pattern and trajectory, in addition to weight and BMI, has been added to the “Assessment” subsection.

Recommendation 8.12 and its associated text discussion added to the “Diet, Physical Activity, and Behavioral Therapy” subsection address the lack of clear evidence that dietary supplements are effective for weight loss.

The “Medical Devices for Weight Loss” subsection has been revised to include more information on a newly approved oral hydrogel.

Recommendation 8.21 has been revised to include behavioral support and routine monitoring of metabolic status.

A new recommendation (Recommendation 8.22) and discussion on postbariatric hypoglycemia, its causes, diagnosis, and management have been added.

Table 8.2, medications approved by the FDA for the treatment of obesity, has been updated to include semaglutide.

Section 9. Pharmacologic Approaches to Glycemic Treatment

(<https://doi.org/10.2337/dc22-S009>)

Recommendation 9.3 has been revised to include fat and protein content, in addition to carbohydrates, as part of education on matching mealtime insulin dosing.

Fig. 9.1, “Choices of insulin regimens in people with type 1 diabetes,” **Fig. 9.2**, “Simplified overview of indications for β -cell replacement therapy in people with type 1 diabetes,” and **Table 9.1**, “Examples of subcutaneous insulin regimens,” from “The Management of Type 1 Diabetes in Adults. A Consensus Report by the American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD)” (<https://doi.org/10.2337/dci21-0043>), have been added to the “Pharmacologic Therapy for Adults with Type 1 Diabetes” subsection.

Table 9.2 has been updated.

Recommendation 9.4 has been revised and is now two recommendations (Recommendations 9.4a and 9.4b) on first-line therapies and initial therapies, all based on comorbidities, patient-centered treatment factors, and management needs.

Recommendation 9.5 has been updated with other considerations for the continuation of metformin therapy after patients have been initiated on insulin.

A new recommendation has been added regarding the use of insulin and combination therapy with a glucagon-like peptide 1 (GLP-1) receptor agonist for greater efficacy and durability (Recommendation 9.11).

The section now concludes with an overview of changes made to **Fig. 9.3**, “Pharmacologic treatment of hyperglycemia in adults with type 2 diabetes,” to reconcile emerging evidence and support harmonization of guidelines recognizing alternative initial treatment approaches to metformin as acceptable, depending on comorbidities, patient-centered treatment factors, and glycemic and comorbidity management needs. The principle of medication incorporation is emphasized throughout **Fig. 9.3**—not all treatment intensification results in sequential add-on therapy, and instead may involve switching therapy or weaning current therapy to accommodate therapeutic changes.

Section 10. Cardiovascular Disease and Risk Management

(<https://doi.org/10.2337/dc22-S010>)

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

A new figure (**Fig. 10.1**) has been added to depict the recommended comprehensive approach to the reduction in risk of diabetes-related complications.

Recommendation 10.1 on screening and diagnosis of blood pressure has been revised to include diagnosis of hypertension at a single health care visit for individuals with blood pressure measuring $\geq 180/110$ mmHg and cardiovascular disease.

More information on low diastolic blood pressure and blood pressure management has been added to the “Individualization of Treatment Targets” subsection under “Hypertension/Blood Pressure Control.”

In the “Treatment Strategies: Lifestyle Interventions” subsection under “Hypertension/Blood Pressure Control,” discussion has been added on the use of internet or mobile-based digital platforms to reinforce healthy behaviors and their ability to enhance the efficacy of medical therapy for hypertension.

More information on use of ACE inhibitors and angiotensin receptor blocker (ARB) therapy for those with kidney function decline has been added to the “Pharmacologic Interventions” subsection under “Hypertension/Blood Pressure Control.”

Ezetimibe being preferential due to its lower cost has been removed from Recommendation 10.24.

More discussion was added on use of evolocumab therapy and reduction in all strokes and ischemic stroke.

A new subsection on statins and bempedoic acid has been added.

A discussion of the ADAPTABLE (Aspirin Dosing: A Patient-Centric Trial Assessing Benefits and Long-term Effectiveness) trial has been added to the “Aspirin Dosing” subsection.

A discussion of the TWILIGHT (Ticagrelor With Aspirin or Alone in High-Risk Patients After Coronary Intervention) trial has been added to the “Indications for P2Y₁₂ Receptor Antagonist Use” subsection.

Recommendation 10.42c has been added to the “Cardiovascular Disease: Treatment” subsection, providing guidance

for patients with type 2 diabetes and established atherosclerotic cardiovascular disease (ASCVD) or multiple risk factors for ASCVD on the use of combined therapy with a sodium–glucose cotransporter 2 (SGLT2) inhibitor with demonstrated cardiovascular benefit and a GLP-1 receptor agonist with demonstrated cardiovascular benefit.

A discussion of the Dapagliflozin and Prevention of Adverse Outcomes in Chronic Kidney Disease (DAPA-CKD) trial, the Effect of Sotagliflozin on Cardiovascular Events in Patients With Type 2 Diabetes Post Worsening Heart Failure (SOLOIST-WHF) trial, and the Effect of Efepeglenatide on Cardiovascular Outcomes (AMPLITUDE-O) have been added, in addition to the results of the Dapagliflozin and Prevention of Adverse Outcomes in Heart Failure (DAPA-HF) trial, the Evaluation of Ertugliflozin Efficacy and Safety Cardiovascular Outcomes Trial (VERTIS CV), and the Effect of Sotagliflozin on Cardiovascular and Renal Events in Patients With Type 2 Diabetes and Moderate Renal Impairment Who Are at Cardiovascular Risk (SCORED) trial, which were added as a Living Standards update in June 2021.

Table 10.3C has been updated.

A new subsection, “Clinical Approach,” now concludes this section on risk reduction with SGLT2 inhibitors or GLP-1 receptor agonist therapy. **Fig. 10.3** has been reproduced from the ADA-endorsed American College of Cardiology “2020 Expert Consensus Decision Pathway on Novel Therapies for Cardiovascular Risk Reduction in Patients with Type 2 Diabetes” (<https://doi.org/10.1016/j.jacc.2020.05.037>) and outlines the approach to risk reduction with SGLT2 inhibitor or GLP-1 receptor agonist therapy in conjunction with other traditional, guideline-based preventive medical therapies for blood pressure as well as lipid, glycemic, and antiplatelet therapy.

Section 11. Chronic Kidney Disease and Risk Management

(<https://doi.org/10.2337/dc22-S011>)

Formerly, Section 11, “Microvascular Complications and Foot Care,” contained content on chronic kidney disease, retinopathy, neuropathy, and foot care. This section has now been divided into two sections: Section 11, “Chronic Kidney Disease and Risk Management” (<https://doi.org/10.2337/dc22-S011>),

and Section 12, “Retinopathy, Neuropathy, and Foot Care” (<https://doi.org/10.2337/dc22-S012>).

Recommendation 11.3a has been revised to include lower glomerular filtration rates and lower urinary albumin as indicators for use of SGLT2 inhibitors to reduce chronic kidney disease (CKD) progression and cardiovascular events.

Recommendation 11.3c has also been revised to include therapy options (nonsteroidal mineralocorticoid receptor antagonist [finerenone]), and a new recommendation has been added (Recommendation 11.3d) regarding reduction of urinary albumin to slow CKD progression.

The concept of blood pressure variability has been added to Recommendation 11.4.

More discussion has been added to the “Acute Kidney Injury” subsection regarding use of ACE inhibitors or ARBs.

Section 12. Retinopathy, Neuropathy, and Foot Care

(<https://doi.org/10.2337/dc22-S012>)

Formerly, Section 11, “Microvascular Complications and Foot Care,” contained content on chronic kidney disease, retinopathy, neuropathy, and foot care. This section has now been divided into two sections: Section 11, “Chronic Kidney Disease and Risk Management” (<https://doi.org/10.2337/dc22-S011>), and Section 12, “Retinopathy, Neuropathy, and Foot Care” (<https://doi.org/10.2337/dc22-S012>).

More discussion was added to the “Diabetic Retinopathy” subsection regarding use of GLP-1 receptor agonists and retinopathy.

Recommendation 12.11 was updated to indicate that intravitreal injections of anti-vascular endothelial growth factor are a reasonable alternative to traditional panretinal laser photocoagulation for some patients with proliferative diabetic retinopathy and also reduce the risk of vision loss in these patients.

Recommendation 12.12 was also updated to recommend intravitreal injections of anti-vascular endothelial growth factor as first-line treatment for most eyes with diabetic macular edema that involves the foveal center and impairs vision acuity.

A new recommendation (Recommendation 12.13) was added on macular

focal/grid photocoagulation and intravitreal injections of corticosteroid.

Section 13. Older Adults

(<https://doi.org/10.2337/dc22-S013>)

In the “Hypoglycemia” subsection, glycemic variability and older adults with physical or cognitive limitations was added to the discussion of use of CGM.

The upper threshold of 8.5% (69 mmol/mol) was removed from the example of less stringent goals for those with multiple coexisting chronic illnesses, cognitive impairment, or functional dependence in Recommendation 13.6.

More discussion was added on classification of older adults in the “Patients With Complications and Reduced Functionality” subsection.

The benefits of a structured exercise program (as in the Lifestyle Interventions and Independence for Elders [LIFE] Study) was incorporated into the “Lifestyle Management” subsection.

More discussion of overtreatment was added to the “Pharmacologic Therapy” subsection, as was the consideration that for those taking metformin long term, monitoring vitamin B12 deficiency should be considered. The insulin therapy discussion was also updated with more information on avoidance of hypoglycemia.

Section 14. Children and Adolescents

(<https://doi.org/10.2337/dc22-S014>)

Table 14.1A and **Table 14.1B** have been newly created and provide an overview of the recommendations for screening and treatment of complications and related conditions in pediatric type 1 diabetes (**Table 14.1A**) and type 2 diabetes (**Table 14.1B**).

The “Diabetes Self-Management Education and Support” subsection now discusses adult caregivers as critical to diabetes self-management in youth, and how they should be engaged to ensure there is not a premature transfer of responsibility for self-management to the youth.

Recommendation 14.7 has been simplified.

Recommendations in the renamed “Glycemic Monitoring, Insulin Delivery, and Targets” subsection (Recommendations 14.18–14.27) have been reorganized and revised to better align with

recommendations in Section 7, “Diabetes Technology” (<https://doi.org/10.2337/dc22-S007>).

The recommendations in the type 1 diabetes “Management of Cardiovascular Risk Factors” subsection (Recommendations 14.34–14.42) have been revised to include more information on timing of screening and treatment and updates to indicators for screening and treatment.

Throughout the section, more has been added regarding reproductive counseling in female youth considering ACE inhibitors and ARBs.

A new recommendation (Recommendation 14.49) was added to the “Retinopathy” subsection for type 1 diabetes regarding retinal photography.

A new recommendation (Recommendation 14.61) has been added on the use of CGM for youth with type 2 diabetes on multiple daily injections or continuous subcutaneous insulin infusion.

The recommendations for hypertension screening and management (Recommendations 14.77–14.80) for type 2 diabetes have been revised.

Fig. 14.1 has been updated.

Section 15. Management of Diabetes in Pregnancy

(<https://doi.org/10.2337/dc22-S015>)

A new recommendation (Recommendation 15.16) and discussion of the evidence on telehealth visits for pregnant women with gestational diabetes mellitus has been added to the “Management of Gestational Diabetes Mellitus” subsection.

A new subsection on “Physical Activity” has been added.

Additional discussion was added regarding insulin as the preferred treatment for type 2 diabetes in pregnancy.

Section 16. Diabetes Care in the Hospital

(<https://doi.org/10.2337/dc22-S016>)

Additional information has been added on the use of CGM during the COVID-19 pandemic to minimize contact between health care providers and patients, especially those in the intensive care unit.

Section 17. Diabetes Advocacy

(<https://doi.org/10.2337/dc22-S017>)

No changes have been made to this section.