



# Summary of Revisions: *Standards of Medical Care in Diabetes—2018*

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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's (ADA's) "Standards of Medical Care in Diabetes" (Standards of Care) has long been a leader in producing guidelines that capture the most current state of the field. Starting in 2018, the ADA will update the Standards of Care even more frequently online should the Professional Practice Committee determine that new evidence or regulatory changes merit immediate incorporation into the Standards of Care. In addition, the Standards of Care will now become the ADA's sole source of clinical practice recommendations, superseding all prior position and scientific statements. The change is intended to clarify the Association's current positions by consolidating all clinical practice recommendations into the Standards of Care. For further information on changes to the classification and definitions of ADA Standards of Care, statements, reports, and reviews, see the Introduction.

*Although levels of evidence for several recommendations have been updated, these changes are not addressed below as the clinical recommendations have remained the same. Changes in evidence level from, for example, E to C are not noted below. The 2018 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

This section was renamed to better capture its subject matter and was reorganized for clarity.

A new recommendation was added about using reliable data metrics to assess and improve the quality of diabetes care and reduce costs.

Additional discussion was included on the social determinants of health.

Text was added describing the emerging use of telemedicine in diabetes care.

### Section 2. Classification and Diagnosis of Diabetes

As a result of recent evidence describing potential limitations in A1C measurements due to hemoglobin variants, assay interference, and conditions associated with red blood cell turnover, additional recommendations were added to clarify the appropriate use of the A1C test generally and in the diagnosis of diabetes in these special cases.

The recommendation for testing for prediabetes and type 2 diabetes in children and adolescents was changed, suggesting testing for youth who are overweight or obese and have one or more additional risk factors (**Table 2.5**).

A clarification was added that, while generally not recommended, community screening may be considered in specific situations where an adequate referral system for positive tests is established.

Additional detail was added regarding current research on antihyperglycemic treatment in people with posttransplantation diabetes mellitus.

### Section 3. Comprehensive Medical Evaluation and Assessment of Comorbidities

The table describing the components of a comprehensive medical evaluation (**Table 3.1**) was substantially redesigned and reorganized, incorporating information about the recommended frequency of the components of care at both initial and follow-up visits.

The immunization section was updated for clarity to more closely align with recommendations from the Centers for Disease Control and Prevention.

Text was added about the importance of language choice in patient-centered communication.

Pancreatitis was added to the section on comorbidities, including a new recommendation about the consideration of islet autotransplantation to prevent post-surgical diabetes in patients with medically refractory chronic pancreatitis who require total pancreatectomy.

A recommendation was added to consider checking serum testosterone in men with diabetes and signs and symptoms of hypogonadism.

### Section 4. Lifestyle Management

A recommendation was modified to include individual and group settings as well as technology-based platforms for the delivery of effective diabetes self-management education and support.

Additional explanation was added to the nutrition section to clarify the ADA's recommendations that there is no universal ideal macronutrient distribution and that eating plans should be individualized.

Text was added to address the role of low-carbohydrate diets in people with diabetes.

### Section 5. Prevention or Delay of Type 2 Diabetes

The recommendation regarding the use of metformin in the prevention of prediabetes was reworded to better reflect the data from the Diabetes Prevention Program.

### Section 6. Glycemic Targets

Based on new data, the recommendation for the use of continuous glucose monitoring (CGM) in adults with type 1 diabetes is no longer limited to those ages 25 and above but has been expanded to all adults

(18 and above) who are not meeting glycemetic targets.

Additional text was added about a new intermittent or “flash” CGM device that was recently approved for adult use.

Details were added about new CGM devices that no longer require confirmatory self-monitoring of blood glucose for treatment decisions.

As in Section 2, this section now includes an expanded discussion of the limitations of A1C in certain populations based on the presence of hemoglobin variants, differences in red blood cell turnover rates, ethnicity, and age.

To clarify the classification of hypoglycemia, level 1 hypoglycemia was renamed “hypoglycemia alert value” from “glucose alert value.”

### Section 7. Obesity Management for the Treatment of Type 2 Diabetes

To provide a second set of cost information, the table of medications for the treatment of obesity (Table 7.2) was updated to include National Average Drug Acquisition Cost (NADAC) prices.

### Section 8. Pharmacologic Approaches to Glycemic Treatment

New recommendations for antihyperglycemic therapy for adults with type 2 diabetes have been added to reflect recent cardiovascular outcomes trial (CVOT) data, indicating that people with atherosclerotic cardiovascular disease (ASCVD) should begin with lifestyle management and metformin and subsequently incorporate an agent proven to reduce major adverse cardiovascular events and/or cardiovascular mortality after considering drug-specific and patient factors.

The algorithm for antihyperglycemic treatment (Fig. 8.1) was updated to incorporate the new ASCVD recommendation.

A new table was added (Table 8.1) to summarize drug-specific and patient factors of antihyperglycemic agents. Figure 8.1 and Table 8.1 are meant to be used together to guide the choice of antihyperglycemic agents as part of patient-provider shared decision-making.

Table 8.2 was modified to focus on the pharmacology and mechanisms of available glucose-lowering medicines in the U.S.

To provide a second set of cost information for antihyperglycemic agents, NADAC data was added to the average wholesale prices information in Table 8.3 and Table 8.4.

### Section 9. Cardiovascular Disease and Risk Management

A new recommendation was added that all hypertensive patients with diabetes should monitor their blood pressure at home to help identify masked or white coat hypertension, as well as to improve medication-taking behavior.

A new figure (Fig. 9.1) was added to illustrate the recommended antihypertensive treatment approach for adults with diabetes and hypertension.

A new table (Table 9.1) was added summarizing studies of intensive versus standard hypertension treatment strategies.

A recommendation was added to consider mineralocorticoid receptor antagonist therapy in patients with resistant hypertension.

The lipid management recommendations were modified to stratify risk based on two broad categories: those with documented ASCVD and those without.

Owing to studies suggesting similar benefits in older versus middle-aged adults, recommendations were consolidated for patients with diabetes 40–75 years and >75 years of age without ASCVD to use moderate-intensity statin.

Table 9.2 (“Recommendations for statin and combination treatment in adults with diabetes”) was updated based on the new risk stratification approach and consolidated age-groups.

To accommodate recent data on new classes of lipid-lowering medications, a recommendation was modified to provide additional guidance on adding nonstatin LDL-lowering therapies for patients with diabetes and ASCVD who have LDL cholesterol  $\geq 70$  mg/dL despite maximally tolerated statin dose.

The same recommendations were added here as in Section 8 that people with type 2 diabetes and ASCVD should begin with lifestyle management and metformin and subsequently incorporate an agent proven to reduce major adverse cardiovascular events and/or cardiovascular mortality after considering drug-specific and patient factors.

The text was substantially modified to describe CVOT data on new diabetes agents and outcomes in people with type 2 diabetes, providing support for the new ASCVD recommendations.

A new Table 9.4 was added to summarize the CVOT studies.

### Section 10. Microvascular Complications and Foot Care

A new table was added (Table 10.1), replacing previous tables 10.1 and 10.2,

that combines information on staging chronic kidney disease and the appropriate kidney-related care for each stage.

A new Table 10.2 was included describing the complications of chronic kidney disease and related medical and laboratory evaluations.

A new section on acute kidney injury was included.

The effect of specific glucose-lowering medications on the delay and progression of kidney disease was discussed, with reference to recent CVOT trials that examined kidney effects as secondary outcomes.

A new recommendation was added on the noninferiority of the anti-vascular endothelial growth factor treatment ranibizumab in reducing the risk of vision loss in patients with proliferative diabetic retinopathy when compared with the traditional standard treatment, panretinal laser photocoagulation therapy.

A new section was added describing the mixed evidence on the use of hyperbaric oxygen therapy in people with diabetic foot ulcers.

### Section 11. Older Adults

Three new recommendations were added to highlight the importance of individualizing pharmacologic therapy in older adults to reduce the risk of hypoglycemia, avoid overtreatment, and simplify complex regimens if possible while maintaining the A1C target.

### Section 12. Children and Adolescents

To make the section more comprehensive and to reflect emerging data on diabetes technologies, additional recommendations were added on the treatment of type 1 diabetes in children and adolescents regarding intensive insulin regimens, self-monitoring of blood glucose, CGM, and automated insulin delivery systems.

The recommended risk-based timing of celiac disease screenings for youth and adolescents with type 1 diabetes was defined.

A recommendation regarding estimating glomerular filtration rate was removed because of the poor performance of the estimating equation in youth.

The type 2 diabetes in children section was substantially expanded, with several new recommendations, based on a recent ADA review.

### Section 13. Management of Diabetes in Pregnancy

A recommendation was added to emphasize that insulin is the preferred agent for

the management of type 1 and type 2 diabetes in pregnancy.

Based on new evidence, a recommendation was added for women with

type 1 and type 2 diabetes to take low-dose aspirin starting at the end of the first trimester to lower the risk of preeclampsia.

**Section 14. Diabetes Care in the Hospital**

Insulin degludec was added to the insulin dosing for enteral/parenteral feedings (**Table 14.1**).