

# Classification & Diagnosis of Diabetes (T1 vs T2)

**Dragana Lovre, M.D.**

Associate Professor of Medicine

Section of Endocrinology and Metabolism

Tulane University Health Sciences Center

# CLASSIFICATION

Diabetes can be classified into the following general categories

1. Type 1 diabetes
  - due to **autoimmune b-cell destruction**, leading to absolute insulin deficiency
2. Type 2 diabetes
  - due to a **progressive loss of b-cell insulin secretion**, frequently on the background of insulin resistance
3. Specific types of diabetes due to **other causes**, e.g., monogenic diabetes syndromes
  - such as neonatal diabetes and maturity-onset diabetes of the young [MODY]), diseases of the exocrine pancreas (such as cystic fibrosis and pancreatitis), and drug- or chemical-induced diabetes such as with glucocorticoid use, in the treatment of HIV/AIDS, or after organ transplantation
4. Gestational diabetes mellitus (GDM)
  - diabetes diagnosed in the **second or third trimester of pregnancy** that was not clearly overt diabetes prior to gestation

# Comparison of Diabetes (1–5)

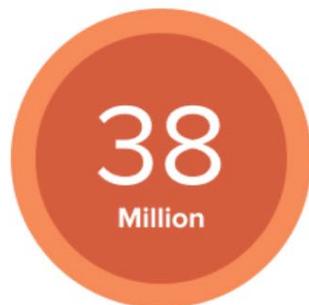
Feature	Type 1	Type 2	Specific types due to other causes	Gestational	Type 5 -Malnutrition-Related Diabetes Mellitus
Population Affected	Children, adolescents, young adults	Adults; increasing in youth	Patients with pancreatic disease	Pregnant women	Malnourished youth in Asia & Africa
Etiology	Autoimmune $\beta$ -cell destruction	Insulin resistance + $\beta$ -cell dysfunction	Pancreatic damage (e.g., pancreatitis, sx)	Pregnancy-related insulin resistance	Poor nutrition affecting pancreas & insulin
Insulin Dependence	Yes	Often progresses to insulin	Often yes	Sometimes (temporary)	Partial; may require insulin
Onset	Rapid	Gradual	After pancreatic insult	2nd–3rd trimester	Adolescence/young adulthood
C-Peptide	Low or absent	Normal/high early, $\downarrow$ later	Low	Normal to high	Low to normal
Autoantibodies	Positive	Negative	Negative	Negative	Negative
Treatment	Insulin	Lifestyle $\pm$ oral meds $\pm$ insulin	Insulin $\pm$ enzyme support	Diet, insulin/oral meds if needed	Nutritional rehab $\pm$ insulin
Common Meds	Insulin	Metformin, GLP-1 RA, SGLT2i, insulin	Insulin, pancrelipase	Insulin, metformin postpartum	Insulin; sometimes oral agents

# DIABETES

## A US REPORT CARD



### DIABETES



About 38 million people **have diabetes**



That's about **1 in every 10** people

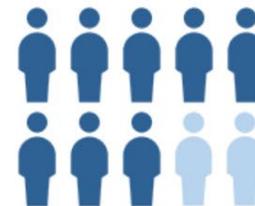


**1 in 5** people **don't know they have it**

### PREDIABETES



About 98 million American adults—**more than 1 in 3**—have prediabetes



**More than 8 in 10** adults with prediabetes **don't know they have it**

# COMMON TYPES OF DIABETES

## TYPE 1

Body doesn't make enough insulin



Can develop at any age



No known way to prevent it

5-10%

In adults, type 1 diabetes accounts for approximately 5-10% of all diagnosed cases of diabetes.

18,000

Just over 18,000 youth diagnosed each year in 2017 and 2018

## TYPE 2

Body can't use insulin properly



Can develop at any age



Most cases can be prevented

90-95%

In adults, type 2 diabetes accounts for approximately 90-95% of all diagnosed cases of diabetes.

nearly 5,300

Nearly 5,300 youth diagnosed each year in 2017 and 2018

Risk factors for type 2 diabetes:



Being overweight



Having a family history



Being physically inactive



Being 45 or older

1.2 Million

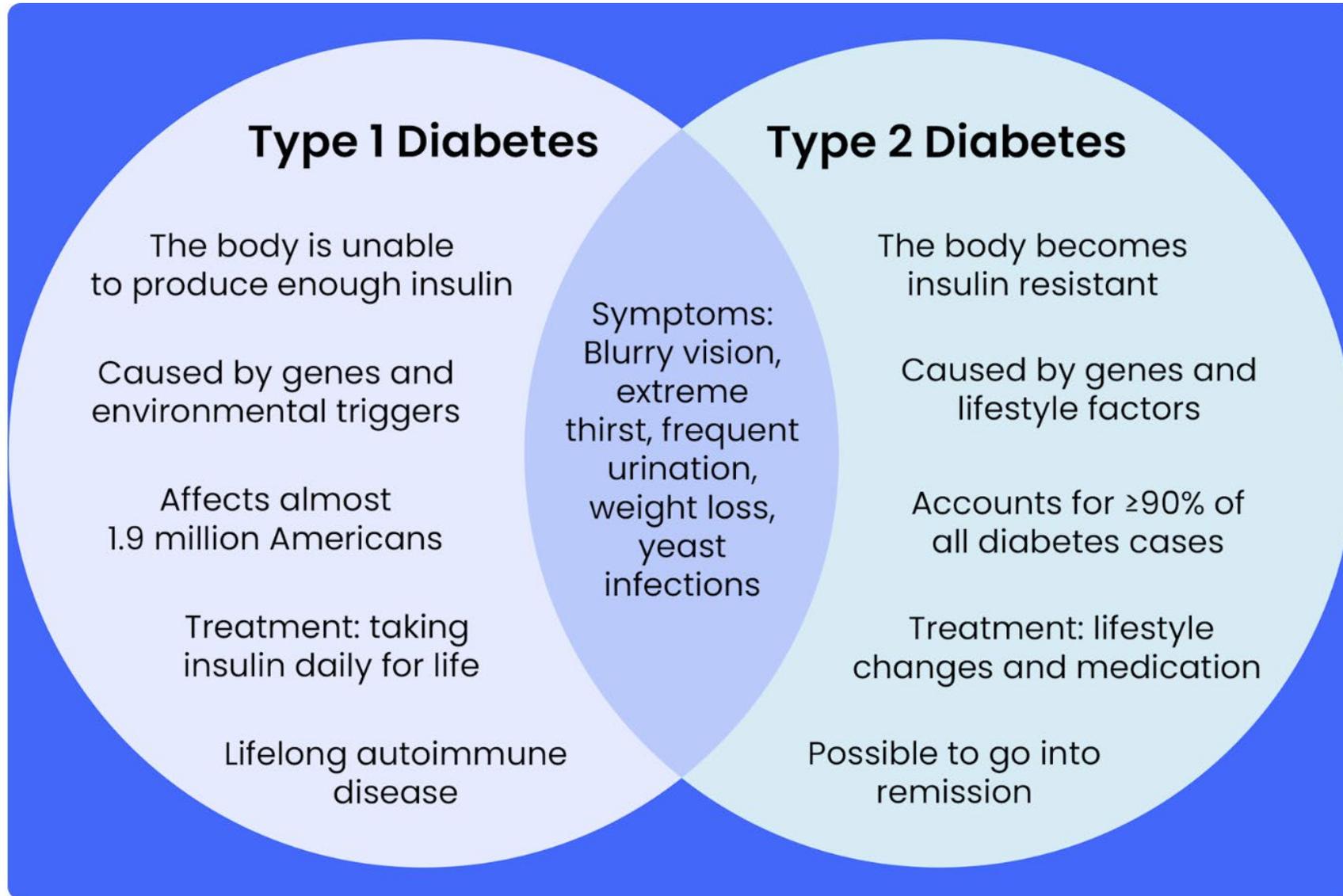
People 18 years or older diagnosed with diabetes in 2021

[https://www.cdc.gov/diabetes/images/library/socialmedia/DiabetesInTheUS\\_Web.jpg](https://www.cdc.gov/diabetes/images/library/socialmedia/DiabetesInTheUS_Web.jpg)

# Prevalence of T1D



1.8 million aged  $\geq 20$  years and  
314,000 younger than age 20 years



# Statistics About Diabetes in the US

- Deaths

- Diabetes was the ~~seventh~~ **eight** leading cause of death in the United States

# Diabetes by Race/Ethnicity

The rates of diagnosed diabetes in adults by race/ethnic background are:

- 13.6% of American Indians/Alaskan Native adults
- 12.1% of non-Hispanic black adults
- 11.7% of Hispanic adults
- 9.1% of Asian American adults
- 6.9% of non-Hispanic white adults

<https://diabetes.org/about-diabetes/statistics/about-diabetes#:~:text=Diabetes%20by%20race%2Fethnicity&text=12.1%25%20of%20non%2DHispanic%20bl ack,of%20non%2DHispanic%20white%20adults>



## The Burden of Diabetes in Louisiana

Diabetes is an epidemic in the United States. According to the Centers for Disease Control and Prevention (CDC), over 38 million Americans have diabetes and face its devastating consequences. What's true nationwide is also true in Louisiana.

### Louisiana's diabetes epidemic:

- Approximately 568,700 adults in Louisiana, or 14.5% of the adult population, have diagnosed diabetes.
- Every year, an estimated 40,000 adults in Louisiana are diagnosed with diabetes.

The serious complications of diabetes include heart disease, stroke, amputation, end-stage kidney disease, blindness—and death.

- **136 million Americans have diabetes or prediabetes**
- **1.2 million Americans are diagnosed with diabetes every year**
- **About 1 in 3 seniors in the United States has diabetes**
- **Diabetes contributes to the death of nearly 400,000 Americans annually**

THE JOURNAL OF CLINICAL AND APPLIED RESEARCH AND EDUCATION

# Diabetes Care.

JANUARY 2026 | VOLUME 49 | SUPPLEMENT 1  
DIABETESJOURNALS.ORG/CARE



## Standards of Care in Diabetes—2026

 American  
Diabetes  
Association.

ISSN 0149-5992

## ADA Standards of Care

**Table 2.5—Criteria for screening for diabetes or prediabetes in asymptomatic adults**

1. Testing should be considered in adults with overweight or obesity (BMI  $\geq 25$  kg/m<sup>2</sup> or  $\geq 23$  kg/m<sup>2</sup> in individuals of Asian ancestry) who have one or more of the following risk factors:
  - First-degree relative with diabetes
  - High-risk race, ethnicity, and ancestry (e.g., African American, Latino, Native American, Asian American)
  - History of cardiovascular disease
  - Hypertension ( $\geq 130/80$  mmHg or on therapy for hypertension)
  - HDL cholesterol level  $< 35$  mg/dL ( $< 0.9$  mmol/L) and/or triglyceride level  $> 250$  mg/dL ( $> 2.8$  mmol/L)
  - Individuals with polycystic ovary syndrome
  - Physical inactivity
  - Other clinical conditions associated with insulin resistance (e.g., severe obesity, acanthosis nigricans, metabolic dysfunction–associated steatotic liver disease)
2. People with prediabetes (A1C  $\geq 5.7\%$  [ $\geq 39$  mmol/mol], IGT, or IFG) should be tested yearly.
3. People who were diagnosed with GDM should have testing at least every 1–3 years.
4. For all other people, testing should begin at age 35 years.
5. If results are normal, testing should be repeated at a minimum of 3-year intervals, with consideration of more frequent testing depending on initial results and risk status.
6. Individuals in other high-risk groups (e.g., people with HIV, exposure to high-risk medicines, evidence of periodontal disease, history of pancreatitis) should also be closely monitored

GDM, gestational diabetes mellitus; IFG, impaired fasting glucose; IGT, impaired glucose tolerance.

# Are you at risk for type 2 diabetes?

## Diabetes Risk Test

1. How old are you? .....

- Less than 40 years (0 points)
- 40–49 years (1 point)
- 50–59 years (2 points)
- 60 years or older (3 points)

WRITE YOUR SCORE IN THE BOX.

2. Are you a man or a woman? .....

- Man (1 point)
- Woman (0 points)

3. If you are a woman, have you ever been diagnosed with gestational diabetes? .....

- Yes (1 point)
- No (0 points)

4. Do you have a mother, father, sister or brother with diabetes? .....

- Yes (1 point)
- No (0 points)

5. Have you ever been diagnosed with high blood pressure? .....

- Yes (1 point)
- No (0 points)

6. Are you physically active? .....

- Yes (0 points)
- No (1 point)

7. What is your weight category? .....

See chart at right.

Height	Weight (lbs.)		
4' 10"	119–142	143–190	191+
4' 11"	124–147	148–197	198+
5' 0"	128–152	153–203	204+
5' 1"	132–157	158–210	211+
5' 2"	136–163	164–217	218+
5' 3"	141–168	169–224	225+
5' 4"	145–173	174–231	232+
5' 5"	150–179	180–239	240+
5' 6"	155–185	186–246	247+
5' 7"	159–190	191–254	255+
5' 8"	164–196	197–261	262+
5' 9"	169–202	203–269	270+
5' 10"	174–208	209–277	278+
5' 11"	179–214	215–285	286+
6' 0"	184–220	221–293	294+
6' 1"	189–226	227–301	302+
6' 2"	194–232	233–310	311+
6' 3"	200–239	240–318	319+
6' 4"	205–245	246–327	328+

1 point    2 points    3 points

If you weigh less than the amount in the left column: 0 points

Adapted from Bang et al., Ann Intern Med 151:775–783, 2009 • Original algorithm was validated without gestational diabetes as part of the model

## If you scored 5 or higher:

You are at increased risk for having type 2 diabetes. However, only your doctor can tell for sure if you do have type 2 diabetes or prediabetes, a condition in which blood glucose levels are higher than normal but not yet high enough to be diagnosed as diabetes. Talk to your doctor to see if additional testing is needed.

Type 2 diabetes is more common in African Americans, Hispanic/Latino individuals, Native Americans, Asian Americans, and Native Hawaiians and Pacific Islanders.

Higher body weight increases diabetes risk for everyone. Asian Americans are at increased diabetes risk at lower body weight than the rest of the general public (about 15 pounds lower).

ADD UP YOUR SCORE

## Lower your risk:

The good news is you can manage your risk for type 2 diabetes. Small steps make a big difference in helping you live a longer, healthier life.

If you are at high risk, your first step is to visit your doctor to see if additional testing is needed.

Visit [diabetes.org](http://diabetes.org) or call 1-800-DIABETES (800-342-2383) for information, tips on getting started, and ideas for simple, small steps you can take to help lower your risk

# What is Prediabetes?

## What is ~~Prediabetes~~?

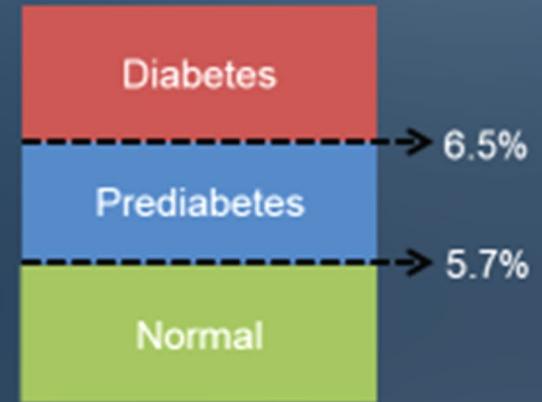
### Fasting plasma glucose



### 2-h plasma glucose during OGTT



### Hemoglobin A1C



Any abnormality must be repeated and confirmed on a separate day using the same test

Diagnosis of diabetes can also be made based on unequivocal symptoms & a random plasma glucose  $\geq 200$  mg/dL

American Diabetes Association. 3. Prevention or delay of type 2 diabetes: Standards of Medical Care in Diabetes 2019. Diabetes Care 2019;42 (Suppl. 1):S29–S33

 American Diabetes Association

## ADA Standards of Care

**Table 2.1—Criteria for the diagnosis of diabetes in nonpregnant individuals**

A1C  $\geq 6.5\%$  ( $\geq 48$  mmol/mol). The test should be performed in a laboratory using a method that is NGSP certified and standardized to the DCCT assay.\*

OR

FPG  $\geq 126$  mg/dL ( $\geq 7.0$  mmol/L). Fasting is defined as no caloric intake for at least 8 h.\*

OR

2-h PG  $\geq 200$  mg/dL ( $\geq 11.1$  mmol/L) during OGTT. The test should be performed as described by the WHO, using a glucose load containing the equivalent of 75 g anhydrous glucose dissolved in water.\*

OR

In an individual with classic symptoms of hyperglycemia or hyperglycemic crisis, a random plasma glucose  $\geq 200$  mg/dL ( $\geq 11.1$  mmol/L). Random is any time of the day without regard to time since previous meal.

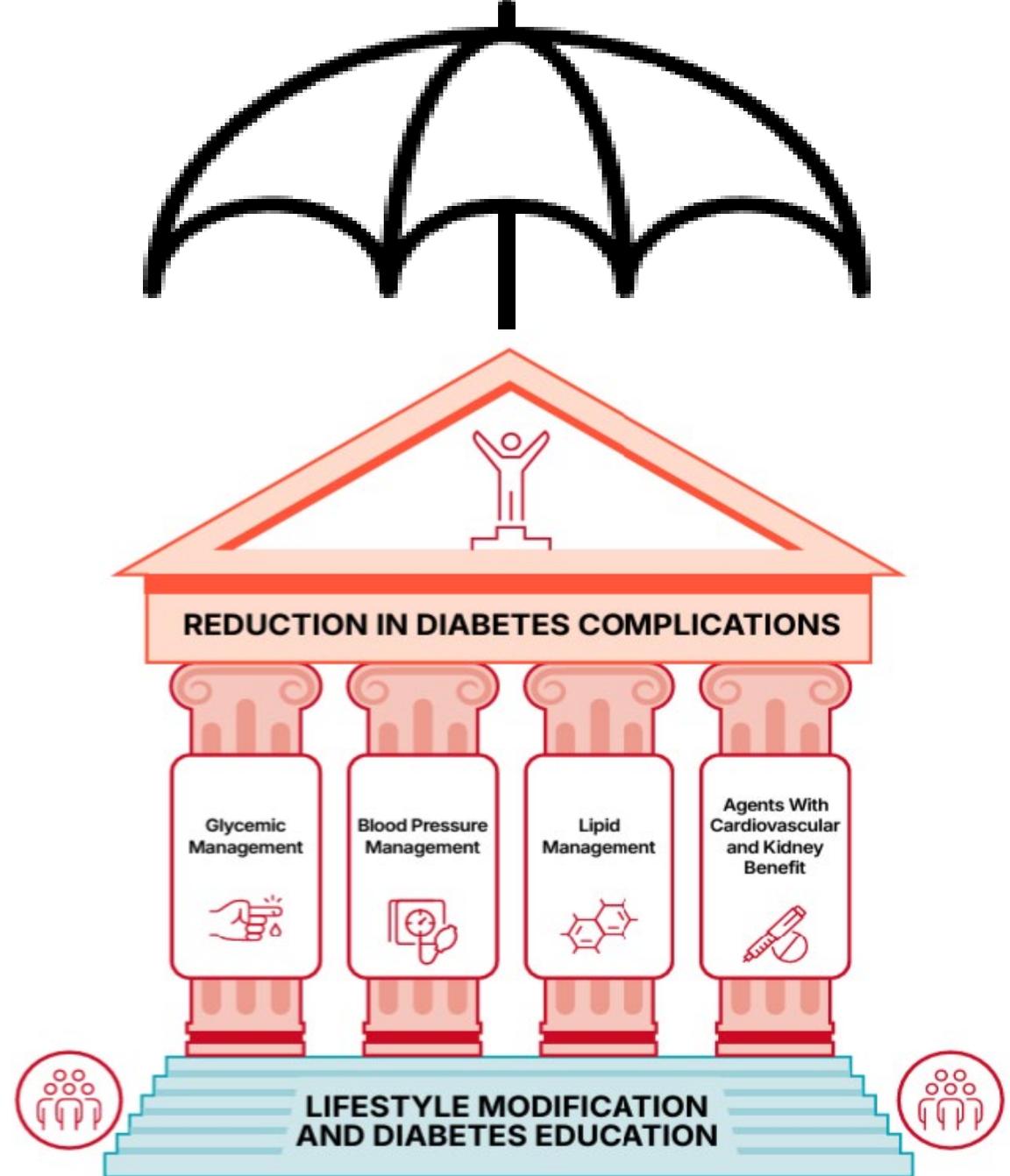
DCCT, Diabetes Control and Complications Trial; FPG, fasting plasma glucose; OGTT, oral glucose tolerance test; NGSP, National Glycohemoglobin Standardization Program; WHO, World Health Organization; 2-h PG, 2-h plasma glucose. \*In the absence of unequivocal hyperglycemia, diagnosis requires two abnormal results from different tests which may be obtained at the same time (e.g., A1C and FPG), or the same test at two different time points.

**Table 2.3—Considerations related to the use and interpretation of laboratory measurements of glucose and A1C**

	Glucose	A1C
Cost	Inexpensive and available in most laboratories across the world	More expensive than glucose and not as widely available globally
Time frame of hyperglycemia	Acute measure	Chronic measure of glucose exposure over the past ~2–3 months
Preanalytic stability	Poor; plasma must be separated immediately or samples must be kept on ice to prevent glycolysis	Good
Sample	Measurement can vary depending on sample type (plasma, serum, whole blood) and source (capillary, venous, arterial)	Requires whole-blood sample
Assay standardization	Not standardized	Well standardized
Fasting	Fasting or timed samples required	Nonfasting test; no participant preparation is needed
Within-person variability	High	Low
Acute factors that can affect levels	Food intake, stress, recent illness, activity	Unaffected by recent food intake, stress, illness, activity
Other individual factors that can affect test results	Diurnal variation, medications, alcohol, smoking, bilirubin	Altered erythrocyte turnover (e.g., anemia, iron status, splenectomy, blood loss, transfusion, hemolysis, glucose-6-phosphate dehydrogenase deficiency, erythropoietin), HIV, cirrhosis, renal failure, dialysis, pregnancy
Test interferences	Depends on specific assay: sample handling/processing time, hemolysis, severe hypertriglyceridemia, severe hyperbilirubinemia	Depends on specific assay: hemoglobin variants, severe hypertriglyceridemia, severe hyperbilirubinemia

Data are from Selvin (217).

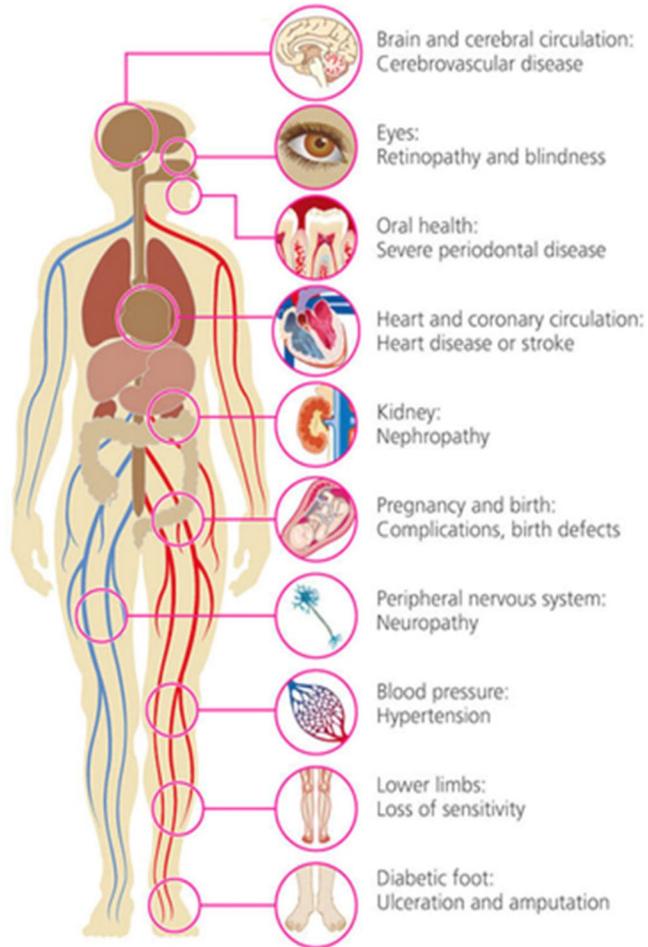
# ADA Standards of Care



# Common Comorbidities

- Cancer
- Cognitive Impairment/  
Dementia
- Fatty Liver Disease
- Pancreatitis
- Fractures
- Hearing Impairment
- HIV
- Low Testosterone (Men)
- Obstructive Sleep Apnea
- Periodontal Disease
- Psychosocial/Emotional  
Disorders

# Taking Care of Diabetes Complications



- Eye care professional for annual dilated eye exam
- Family planning for women of reproductive age
- Registered dietitian for MNT
- DSMES
- Dentist for comprehensive dental and periodontal examination
- Mental health professional, if indicated

\*2024 New emphasis on the evaluation and treatment **of bone health** and added attention to diabetes-specific risk factors for fracture.

\*2024 New screening recommendations for **heart failure** in people with diabetes.

\*2025 – T1D section, on importance of antibody-based screening for presymptomatic T1D in individuals with FHx of T1D

\*2025-a new subsection, “Dental Care” was added and includes a recommendation that pts should be referred for dental exam Q1yr

2023

AMERICAN ASSOCIATION OF CLINICAL ENDOCRINOLOGY

AACE COMPREHENSIVE

**TYPE 2 DIABETES**

MANAGEMENT ALGORITHM

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Algorithm Title Page



# PROFILES OF ANTIHYPERGLYCEMIC MEDICATIONS

	MET	GLP-1 RA	DUAL GIP/ GLP-1RA	SGLT2i	TZD	INSULIN (basal & basal bolus)	DPP-4i	SU	GLN	AGI	COLSVL	BRC	PRAML	
EFFICACY FOR GLUCOSE LOWERING	++	+++	+++	++	++	+++/++++	+	++	+	+	+	+	+	
ASCVD	MACE	Benefit <sup>1,3</sup>	Safe	Benefit <sup>2</sup>	Neutral <sup>3</sup>	Neutral	Neutral	Possible Increased Risk	Neutral	Insufficient Evidence	Neutral <sup>3</sup>	Safe	Insufficient Evidence	
	CHF	Neutral		Unclear	Reduced Risk	Moderate to Severe <sup>4</sup>	Moderate							Moderate <sup>4</sup>
	STROKE			Benefit <sup>5</sup>	Possible Benefit <sup>2</sup>	Benefit	Neutral							Neutral
CKD	CKD3a/3b <sup>6</sup>	Benefit <sup>7</sup>	Insufficient Evidence	Benefit	Neutral	Increased hypoglycemia risk with impaired renal function	Neutral	Increased hypoglycemia risk with impaired renal function	Not recommended SCR >2 mg/dL or CrCl <25	Neutral	Neutral	Neutral	Neutral	
RENAL ADJUSTMENT	Not with CKD4 eGFR <30 <sup>6</sup>	Exenatide not recommended eGFR <45		Check medication- specific eGFR thresholds <sup>8</sup>			Adjust Dose <sup>9</sup>							
HYPOGLYCEMIA RISK <sup>14</sup>	Neutral	Neutral	Neutral	Neutral	Neutral	Moderate to Severe	Neutral	Moderate to Severe	Mild	Neutral	Neutral	Neutral	Neutral	
WEIGHT	Slight loss	Loss	Loss	Loss	Gain <sup>4</sup>	Gain	Neutral	Gain	Neutral	Neutral	Neutral	Neutral	Loss	
NAFLD	Neutral	Benefit	Benefit	Potential Benefit	Benefit	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Benefit	
GI ADVERSE SYMPTOMS	Mild to Moderate	Moderate <sup>10</sup>	Moderate <sup>10</sup>	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Moderate	Mild	Moderate	Moderate	
OTHER CONSIDERATIONS		Medullary Thyroid Carcinoma/ MEN2	Medullary Thyroid Carcinoma/ MEN2	GU infections DKA <sup>11</sup> Fracture Risk <sup>12</sup>	Fracture Risk		Rare Arthralgias/ Myalgias							
ACCESS/COST	\$	\$\$\$	\$\$\$	\$\$\$	\$	\$ - \$\$\$ <sup>13</sup>	\$-\$	\$	\$-\$	\$-\$	\$\$\$	\$\$\$	\$\$\$	

■ Possible benefits   
 ■ Use with caution   
 ■ Likelihood of adverse events   
 ■ Neutral, not studied, insufficient evidence

<sup>1</sup>GLP-1 RA MACE benefits with liraglutide, semaglutide, dulaglutide. <sup>2</sup>SGLT2i MACE benefits with empagliflozin, canagliflozin. Possible benefit for hemorrhagic stroke. <sup>3</sup>GLP-1 RA, TZD, COLSVL can lower LDL. <sup>4</sup>TZDs increase fluid retention and edema and are contraindicated in persons with NYHA Class III/IV CHF. There is increased risk of hospitalization for CHF with saxagliptin, and limited experience for persons with NYHA Class II/IV CHF with alogliptin <sup>5</sup>GLP-1 RA stroke benefits observed with semaglutide and dulaglutide. <sup>6</sup>CKD3a no adjustment with monitoring, CKD3b decrease dose and do not initiate, CKD4 contraindicated. Hold for acute kidney injury, IV contrast. <sup>7</sup>Dulaglutide, semaglutide decrease CKD progression. <sup>8</sup>The eGFR thresholds for initiation and/or continuation of therapy in CKD vary among SGLT2i. Check medication-specific eGFR levels. <sup>9</sup>Only linagliptin does not require adjustment. <sup>10</sup>Slow titration, portion control, and consider reducing to prior tolerated dose. <sup>11</sup>Precipitants include significant current illness, surgery, inappropriate or rapid insulin dose reduction. <sup>12</sup>Reported with canagliflozin, dapagliflozin. <sup>13</sup>Cost varies widely with devices (e.g., pens), formulations (e.g., analogues), and combinations (e.g., 70/30). <sup>14</sup>Single-agent risks of hypoglycemia may be low but increases when combined with other agents.

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Algorithm Figure 9-Antihyperglycemic Medications

# 2024 Abridged Standards of Care

This collection provides an abridged version of the American Diabetes Association's (ADA's) *Standards of Care in Diabetes—2024* designed especially for primary care professionals. Developed by the ADA's Primary Care Advisory Group\*, this new resource contains the evidence-based clinical practice recommendations most pertinent to primary care—all presented in a user-friendly format. Its recommendations are substantively the same as in the complete ADA Standards of Care, but presented in succinct bullet points and helpful graphics.

Readers who wish to comment on the abridged or complete Standards of Care are invited to do so at <https://professional.diabetes.org/SOC>.

\*Collaborating members include Nuha A. ElSayed, Arshiya Baig, Sarah Bradley, Jennifer Gonzalez, Andrea Haynes, Rozalina G. McCoy, Joy Moverley, Sean M. Oser, Kim Pfothenauer, Diana Rapalo, Alissa R. Segal, Ashlyn Smith, Heidi Webb, Elizabeth J. Pekas, and Raveendhara R. Bannuru.



CONSENSUS REPORT | SEPTEMBER 28 2022

# Management of Hyperglycemia in Type 2 Diabetes, 2022. A Consensus Report by the American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD)

Melanie J. Davies  ; Vanita R. Aroda  ; Billy S. Collins  ; Robert A. Gabbay  ; Jennifer Green  ; Nisa M. Maruthur  ;  
Sylvia E. Rosas  ; Stefano Del Prato  ; Chantal Mathieu  ; Geltrude Mingrone  ; Peter Rossing  ; Tsvetalina Tankova  ;  
Apostolos Tsapas  ; John B. Buse  



Corresponding author: John B. Buse, [jbuse@med.unc.edu](mailto:jbuse@med.unc.edu)

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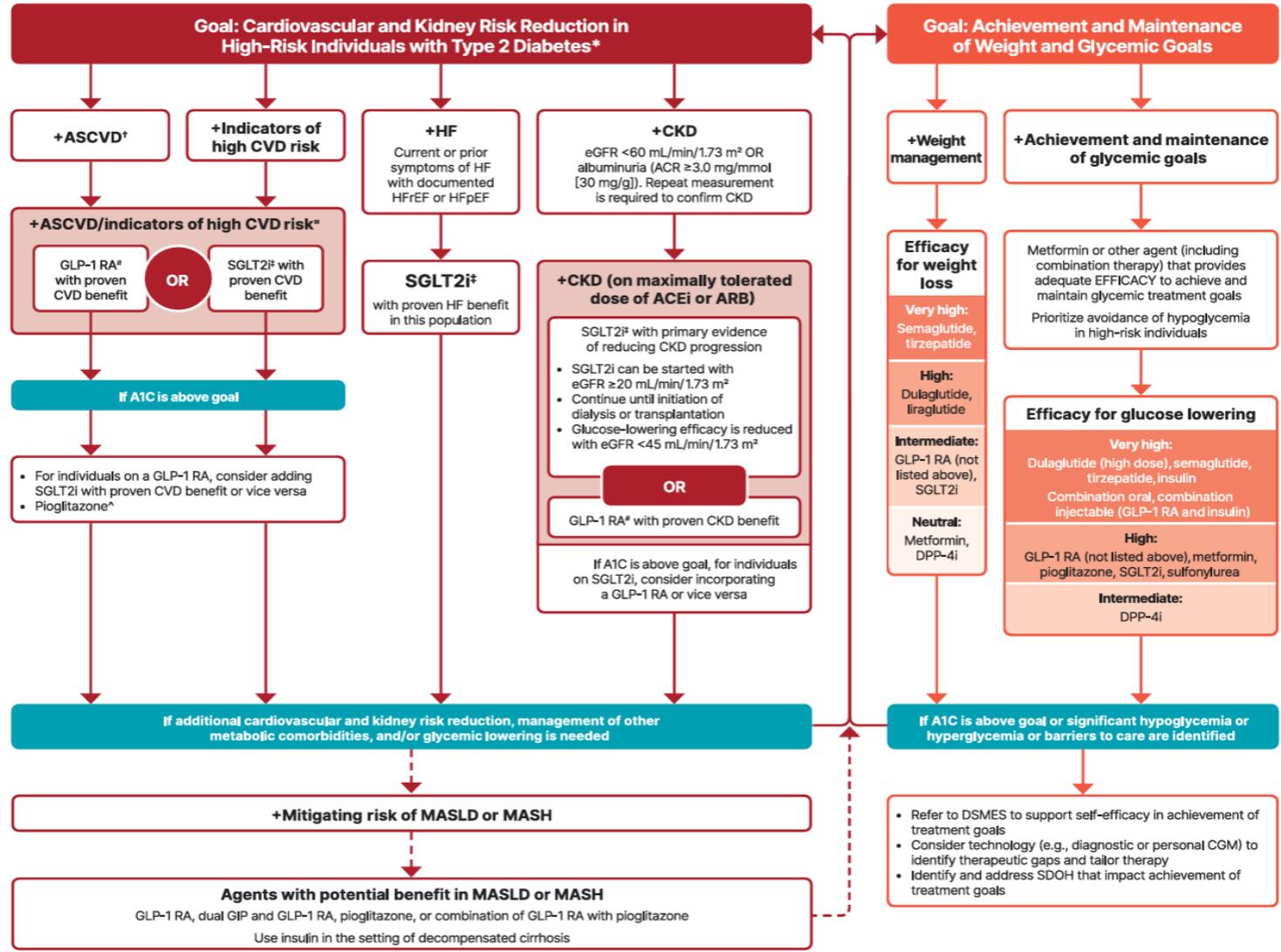


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# Use of Glucose-Lowering Medications in the Management of Type 2 Diabetes

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EDUCATION AND SUPPORT; SOCIAL DETERMINANTS OF HEALTH

To avoid therapeutic inertia, reassess and modify treatment regularly (3-6 months)





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**As advances in diabetes treatment evolve at a rapid-fire pace, Diabetes Is Primary targets clinicians on the frontlines of primary care.** Diabetes Is Primary delivers easily accessible continuing education to meet the needs of busy primary care providers (PCPs).

The program is based on the ADA's *Standards of Medical Care in Diabetes*—the gold standard in diabetes treatment. These guidelines, updated annually, ensure that patients receive up-to-date, evidence-based care.

Additionally, Diabetes Is Primary helps PCPs navigate the complex changes in the health care industry, including new therapies and their costs, population health, and more.

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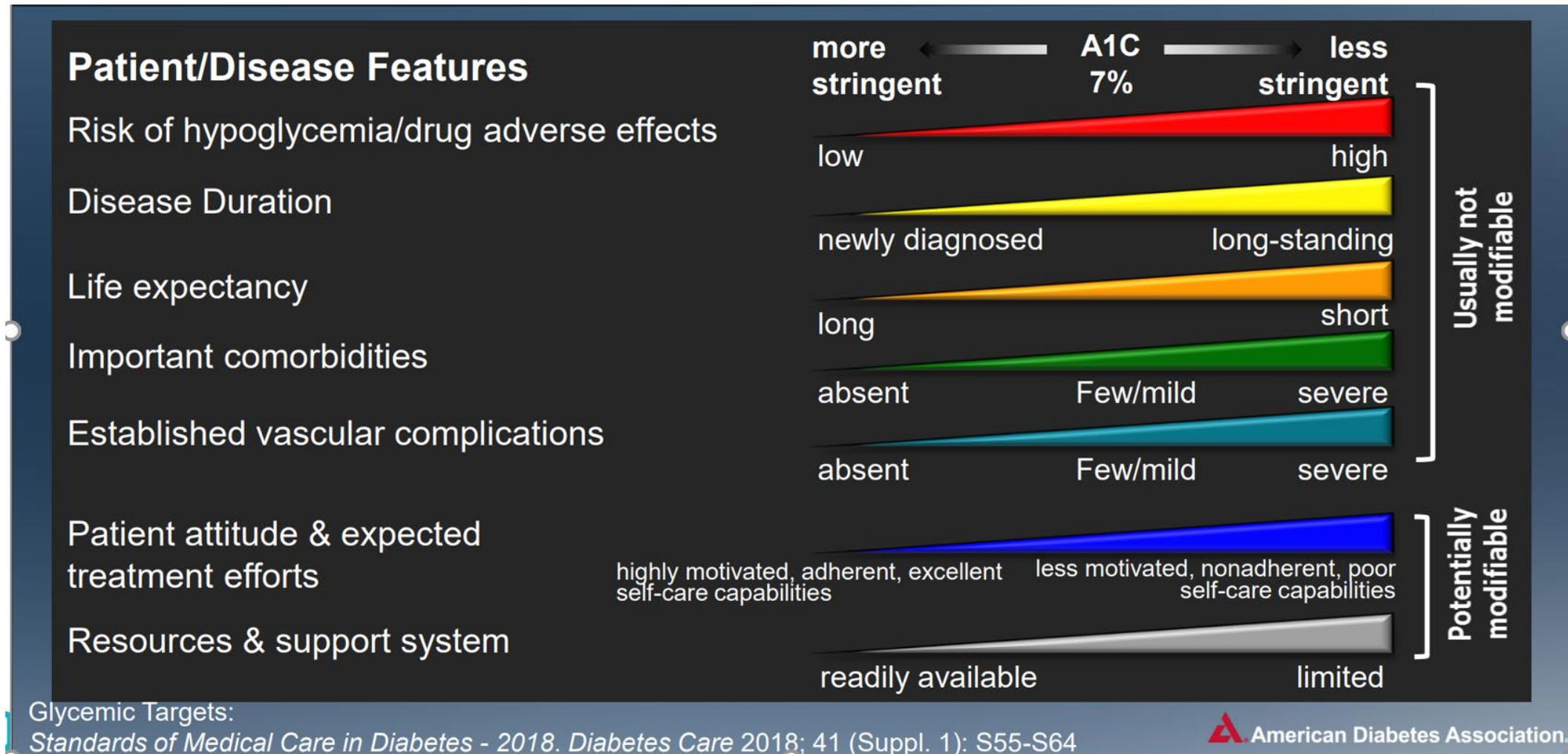
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JANUARY 31-FEBRUARY 2, 2025

 American  
Diabetes  
Association.

# Approach to the Management of Hyperglycemia



# Achieving Healthy Eating Habits: *Plate Method*

