

Clinical Diabetes in Primary Care 2024

Diagnosis and Management

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Diagnostic Tests for Diabetes

Diagnostic criteria

Diagnostic Tests for Diabetes



Random glucose value with classic hyperglycemia symptoms/ hyperglycemic crisis

- Insufficient evidence supports continuous glucose monitoring for screening or diagnosing prediabetes or diabetes.
- In the absence of unequivocal hyperglycemia (e.g., hyperglycemic crisis), diagnosis of type 2 diabetes requires confirmatory testing, which can be a different test on the same day or the same test on a different day.
- Marked discordance between A1C and repeated blood glucose measurements should raise the possibility of a problem or interference with either test.¹

Classification¹

Classification of diabetes type is not always straightforward at presentation, and misdiagnosis is common.

Type 1 diabetes (idiopathic or autoimmune β -cell destruction)

Gestational diabetes mellitus (GDM; detected at 24–28 weeks of gestation in individuals without previously identified diabetes or high-risk glucose metabolism)



Type 2 diabetes (non-autoimmune progressive loss of adequate β -cell insulin secretion frequently on the background of insulin resistance and metabolic syndrome)





Diabetes from other causes (e.g., monogenic diabetes syndromes, diseases of the exocrine pancreas, and drug- or chemical-induced diabetes)

1. American Diabetes Association Primary Care Advisory Group. 2. Diagnosis and classification of diabetes: *Standards of Care in Diabetes—2024* abridged for primary care professionals. *Clin Diabetes* 2024; 42:183–185 (doi: 10.2337/cd24-a002). ©2024 by the American Diabetes Association.

What medications can be prescribed to adults to prevent type 2 diabetes?

The U.S. Food and Drug Administration has not approved any drugs for diabetes prevention. Metformin has the strongest evidence base for diabetes prevention.

K Who should be considered for metformin therapy to prevent type 2 diabetes?

-  Adults aged 25–59 years with a BMI ≥ 35 kg/m²
-  Individuals with higher fasting plasma glucose (e.g., ≥ 110 mg/dL [≥ 6 mmol/L])
-  Those with higher A1C (e.g., $\geq 6.0\%$ [≥ 42 mmol/mol])
-  Individuals with a history of gestational diabetes mellitus



K What parameters should be monitoring in people on metformin therapy?

Vitamin B12 should be measured periodically, especially in those with anemia or peripheral neuropathy.

K Screening for type 1 diabetes?

1. Screen using autoantibodies
2. In people with preclinical type 1 diabetes, monitor for disease progression using A1C approximately every 6 months and 75-g oral glucosetolerance test (i.e., fasting and 2-h plasma glucose) annually; modify frequency of monitoring based on individual risk assessment based on age, number and type of autoantibodies, and glycemic metrics.

K Medication to delay the onset of type 1 diabetes

Teplizumab-mzvw infusion to delay the onset of symptomatic type 1 diabetes should be considered in selected individuals who are ≥ 8 years of age and have stage 2 type 1 diabetes.



Staging of type 1 diabetes^{2,3}

	Stage 1	Stage 2	Stage 3
Characteristics	Autoimmunity Normoglycemia Presymptomatic	Autoimmunity Dysglycemia Presymptomatic	Autoimmunity Overt hyperglycemia Symptomatic
Diagnostic criteria	Autoantibodies may become absent Diabetes by standard criteria.	Islet autoantibodies (usually multiple) Dysglycemia: IFG and/or IGT FPG 100–125 mg/dl (5.6–6.9 mmol/L) 2-h PG 140–199 mg/dl (7.8–11.0 mmol/L) A1C 5.7–6.4% (39–47 mmol/mol) or ≥10% increase in A1C	Autoantibodies may become absent Diabetes by standard criteria

- Adapted from Skyler JS, Bakris GL, Bonifacio E, et al. Differentiation of diabetes by pathophysiology, natural history, and prognosis. *Diabetes* 2017; 66:241–255. FPG, fasting plasma glucose; IFG, impaired fasting glucose; IGT, impaired glucose tolerance; 2-h PG, 2-h plasma glucose. Alternative additional stage 2 diagnostic criteria of 30-, 60-, or 90-min plasma glucose on oral glucose tolerance test ≥200 mg/dL (≥11.1 mmol/L) and confirmatory testing in those aged ≥ 18 years have been used in clinical trials. Herold KC, Bundy BN, Long SA, et al.; 3. Type 1 Diabetes Trial Net Study Group. An anti-CD3 antibody, teplizumab, in relatives at risk for type 1 diabetes. *N Engl J Med* 2019; 381:603–613.

κ Does statin therapy increase the risk of developing type 2 diabetes?

- Statin therapy may slightly elevate type 2 diabetes risk in high-risk individuals.
- In primary and secondary prevention of cardiovascular disease, statin benefits outweigh diabetes risk.
- Discontinuing statins based on concerns about increased diabetes risk is not advised.

κ Does pioglitazone have a role in secondary cardiovascular prevention in people at risk for type 2 diabetes?

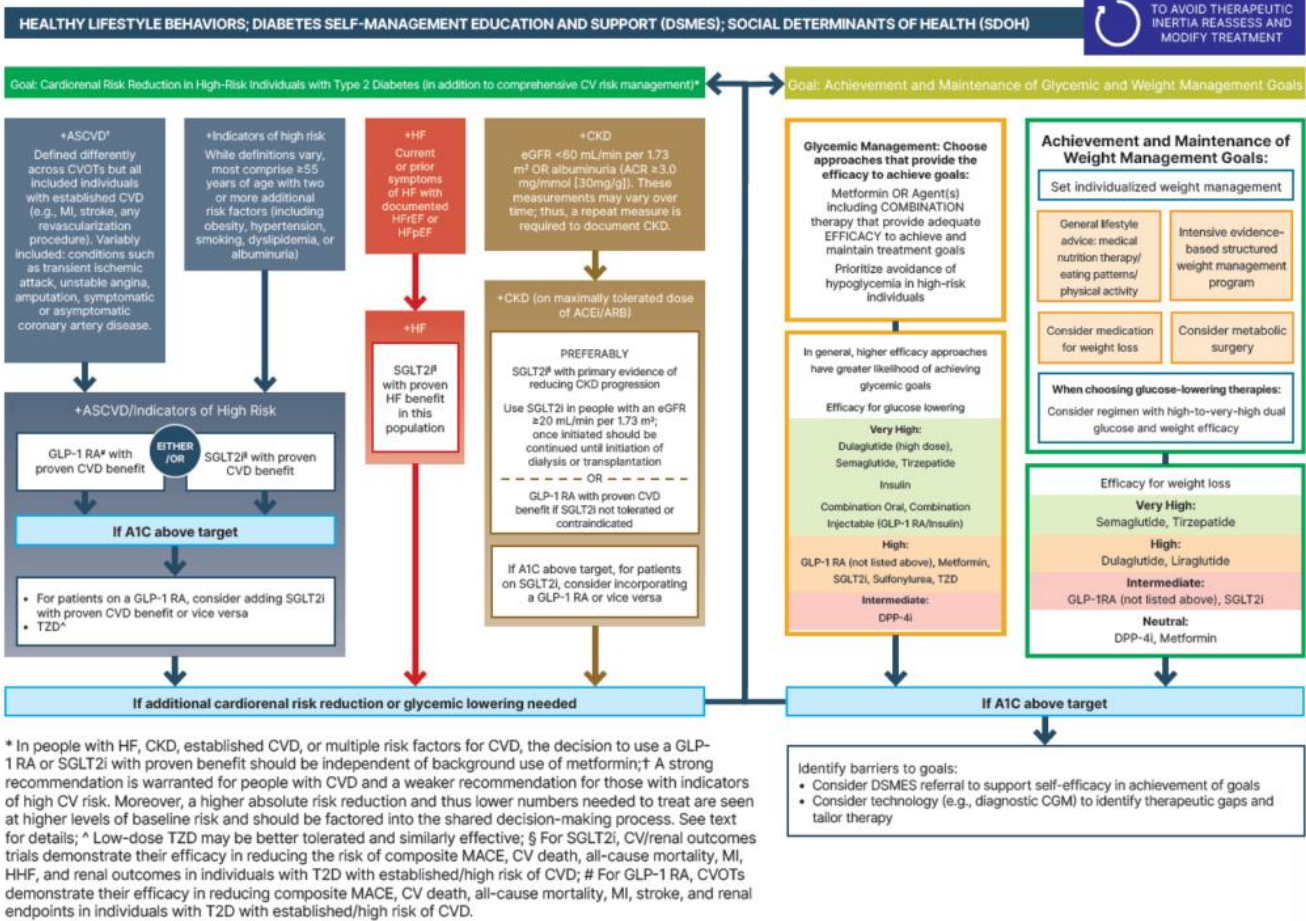
Pioglitazone could reduce stroke and myocardial infarction risks in people with a history of stroke and evidence of insulin resistance or prediabetes. However, the benefit must be weighed against potential weight gain, edema, and increased fracture risk. Lower doses may lessen these adverse effects.

Pharmacologic Approaches to Glycemic Treatment

Ways to Address or Prevent Therapeutic Inertia for People with Type 1 or Type 2 Diabetes

EMPOWER PATIENTS	OPTIMIZE CARE AND TREATMENT	LEVERAGE TOOLS AND TECHNOLOGY
BE A BARRIER BUSTER	ACT NOW	IMPROVE DECISION-MAKING
Schedule diabetes-only visits.	Conduct practice-based screening for likely therapeutic inertia.	Follow a diabetes treatment algorithm.
Set and track shared goals and time frames.	Make personalized diabetes care plans.	Create and use a patient registry.
Integrate screening for social/emotional barriers and identify support.	Implement a team-based approach to increase the frequency and quality of engagement.	Integrate decision support into the workflow.
Prescribed thoughtfully.	Utilize A1C and glucose data to drive rapid-cycle treatment intensification.	Utilize technology to enhance communication with people with diabetes.
Refer to diabetes self-management education and support (DSMES).	Stratify follow-up based on A1C/glucose data and changes in therapy.	Disseminate unblinded quality metrics.
Do your patients know you are their champion?	Have you done everything in your control to optimize therapy and support during, after, and	Have you enabled everyone in your practice to make high-quality treatment decisions quickly and consistently?

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



Reference

- American Diabetes Association Primary Care Advisory Group. 2. Diagnosis and classification of diabetes: *Standards of Care in Diabetes—2024* abridged for primary care professionals. Clin Diabetes 2024; 42:183–185 (doi: 10.2337/cd24-a002). ©2024 by the American Diabetes Association.
- Skyler JS, Bakris GL, Bonifacio E, et al. Differentiation of diabetes by pathophysiology, natural history, and prognosis. Diabetes 2017; 66:241–255

3. Type 1 Diabetes Trial Net Study Group. Teplizumab is an anti-CD3 antibody used in relatives at risk for type 1 diabetes. *N Engl J Med* 2019; 381:603–613.

4. American Diabetes Association Primary Care Advisory Group. Pharmacologic approaches to glycemic treatment: *Standards of Care in Diabetes—2024* abridged for primary care professionals. *Clin Diabetes* 2024; 42:206–208 (doi: 10.2337/cd24-a009). ©2024 by the American Diabetes Association.

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